Community Climate Action Plan

Working towards a 33% reduction in greenhouse gases

May 2012

City of Kelowna
Policy & Planning

Acknowledgements and Further Information

The City of Kelowna would like to acknowledge the following:

- Stakeholders, businesses and the public that participated in Climate Action workshops and/or completed surveys
- Major stakeholders such as Fortis BC
- City staff
- Hyla Environmental Services who wrote the "Draft Climate Action Discussion Paper: Foundations for a Community Climate Action Plan," 2010. This draft Discussion Paper formed the basis for calculating the greenhouse gas emissions forecast for 2020 as well as provided all of the reduction initiatives and quantities listed in this report.
- Federation of Canadian Municipalities Green Municipal Fund

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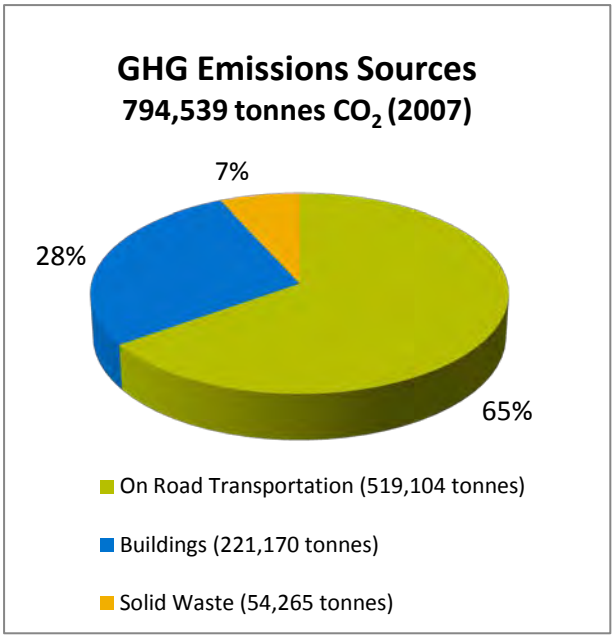
Executive Summary



Imagine a future where Kelowna is compact and walkable; the natural environment is protected and preserved; and walking paths and bicycle routes connect key destinations.[1] According to 2030 OCP community input and Citizen Surveys, this is the type of future the community desires and one that would make Kelowna a great place to live. This is also a future that would lower the community's greenhouse gas emissions, and improve Kelowna citizens' health and quality of life.

In 2007, 794,539 tonnes of greenhouse gases were emitted in Kelowna. It is estimated that, by 2020, emissions will increase by 17%, reaching over 932,000 tonnes if the community continues business as usual. The community will have to reduce emissions by over 400,000 tonnes in order to reach our 33% reduction goal.

According to the most recent provincial report which provides baseline data for the year 2007, motor vehicles account for most (over 65%) of Kelowna's community greenhouse gas emissions. Energy use in buildings accounted for 28% and emissions from solid waste contributed 7%.

Based on this information, reducing the amount people drive and changing the types of vehicles residents and businesses use will have the greatest impact on reducing emissions.

Implementing district energy, improving energy efficiency in new and existing buildings and increasing density will all help to lower emissions coming from buildings.

Achieving the targets set out in the Regional Solid Waste Management Plan will result in significant reductions in the waste sector.

Land use planning and urban design can influence reductions in greenhouse gas emissions through creating a compact, walkable community.

Lastly, in order to achieve our goal, Kelowna will also rely on senior government and/or new technology to come up with additional programs, policies, legislation or new products to reduce the remaining community greenhouse gas emissions.

Emission Reduction Opportunities

Category	Reduction (tonnes)	Percentage of Total
The Way We Get Around (Transportation)	216,651	54.1%
The Energy We Use	36,199	9.1%
Planning Our Community	31,450	7.9%
The Waste We Create	49,022	12.2%
Further Senior Government Action and/or new technology	66,847	16.7%
TOTAL	**400,169**	**100%**

The initiatives identified in this report will not only help reduce Kelowna's contributions to global emissions, but will also make Kelowna a stronger, healthier, more resilient community.

[1] Kelowna 2030 Official Community Plan, 2011. Page 1-1/

Throughout the development of the Plan, numerous opportunities were presented for consultation to staff, stakeholders, businesses and the public to allow for feedback to be incorporated and to ensure that City departments will be able to implement the actions included in this Plan.

Beyond mitigating greenhouse gas emissions, the City must look towards adapting to a climate changed world. Climate change is a global problem that is already being realized and even if Kelowna is successful in drastically reducing emissions, the reality is that the climate could still be significantly different in the region 50 years from now. Climate change adaptation is necessary to address the potential impacts as well as take advantage of opportunities.

1. Building a Better City

Imagine a future where Kelowna is compact and walkable; the natural environment is protected and preserved; and walking paths and bicycle routes connect to key destinations.[2] Picture a future with cleaner air, less pollution, stronger neighbourhoods and active, healthy citizens. Envision a sustainable city that creates a balance between environmental protection and economic growth. This is a future that the community has been asking for through input to the 2030 Official Community Plan and past Citizen Surveys and is one that will reduce greenhouse gas emissions.

Human activities, such as driving vehicles and heating our homes, are resulting in increases in carbon dioxide and other greenhouse gases in our atmosphere. In 2007, the Intergovernmental Panel on Climate Change (IPCC), representing the most respected climate experts worldwide, issued a report with evidence that these activities are causing the Earth's climate to change and that its effects will worsen if no action is taken.[3]

Cities can have a huge influence on emissions. In fact, it is estimated that 75% of all greenhouse gas emissions are generated in the world's urban areas.[4] Local governments have the opportunity to influence the emissions generated in their community. A Community Climate Action Plan lays out a strategy and provides policy recommendations to address climate change and reduce community greenhouse gas emissions. The opportunities to reduce are abundant - from planning dense, compact communities to providing transit and cycling infrastructure and managing waste.

Multi-use pathway on Abbott Street

Implementing a Community Climate Action Plan can do much more than lower greenhouse gases. Reducing vehicle kilometers travelled per person can improve air quality; personal health; decrease contaminants in storm water; and lessen the need for costly road infrastructure upgrades. Increasing density can result in more green space; reduced infrastructure costs; time and money savings; and an improved sense of community.

2. Impacts of Climate Change

The National Round Table on the Environment and the Economy (NRTEE) recently released Paying the Price: the Economic Impacts of Climate Change for Canada, the first national study to show what the economic consequences to Canada could be as a result of climate change.

Changes in timber supply, flooding, health related impacts, and poor air quality are just a few of the many things caused by climate change that overall could cost Canadians roughly $5 billion per year in 2020 escalating to between $21 billion and $43 billion per year by 2050. The magnitude of costs

[2] Kelowna 2030 Official Community Plan, 2011. Page 1-1/
[3] LiveSmart BC, www.livesmartbc.ca/learn/overview.html
[4] Chicago Climate Action Plan, page 7

depends upon a combination of two factors: global emissions growth and Canadian economic and population growth.[5]

The effects of a changing climate are already noticeable in the Okanagan. If climate change continues as it is projected to do (according to the World Meteorological Organization the 13 warmest years on record have all occurred in the 15 years between 1997 and 2011[6]) there may be a greater number of people affected than ever before. The Okanagan may experience:

- Warmer, wetter winters and hotter, drier summers as indicated by climate models [7]
- Earlier spring runoff and later autumn rains which have already been evident in stream flow patterns that have changed over the past 30 years.[8]
- Continued impacts of mountain pine beetle which are normally kept in check by cold winters.[9]
- Social challenges and rising energy prices which will cost residents more to fuel vehicles and heat or cool homes.
- Impacts to tourism, agriculture and the overall economy.
- Increased health related impacts. Increases in heat and humidity can also lead to a risk of heart attack and death, especially in those people who have cardiovascular disease or are at an increased risk for it, particularly seniors.[10]

Effects of Mountain Pine Beetle

The report recommends global mitigation leading to a low climate change future as well as adaptation measures to address climate change to reduce costs to Canada in the long term.[11] Local governments can play a large role in reducing Canada's greenhouse gas emissions in their own communities. Kelowna's Community Climate Action Plan contains numerous reduction initiatives that will help Kelowna build a resilient, low carbon future.

3. The Goal

Recognizing that it takes the involvement of all levels of government and people working together to realize success, the federal government, the Province of BC, and all BC municipalities have set goals to lower greenhouse gas emissions. The Federal government is committed to reducing greenhouse gas (GHG) emissions by 17% from 2005 levels by 2020 and has asked communities across Canada to join Partners for Climate Protection, which Kelowna joined in 2001. The Province of B.C. has committed to reducing GHG emissions by 33 per cent from 2007 levels by 2020, and the City of Kelowna, together with 177 other local governments have signed the Provincial Climate Action Charter, committing to finding ways to tackle the challenges posed by climate change and pledging to significantly cut greenhouse gas emissions by 2012.[12]

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[5] National Roundtable on the Environment and the Economy. Paying the Price: The Economic Costs of Climate Change for Canada. nrtee-trnee.ca/climate/climate-prosperity/the-economic-impacts-of-climate-change-for-canada/paying-the-price

[6] World Meteorological Organization. Provisional Statement on the Status of the Global Climate. http://www.wmo.int/pages/mediacentre/press_releases/gcs_2011_en.html

[7] Environment Canada, 2005. EnviroZine, Issue 51, February 2005. Is the Okanagan Valley Drying Up?

[8] Natural Resources Canada. Temperature rising: Climate Change in Southwestern British Columbia. www.adaptation.rncan.gc.ca/posters/bc/bc_08_e.php

[9] Province of BC. British Columbia's Climate Action Plan. www.livesmartbc.ca/government/plan.html

[10] Canada's Public Health Association. Climate Change and Health. www.cpha.ca/en/activities/ccah.aspx

[11] National Roundtable on the Environment and the Economy. Paying the Price: The Economic Costs of Climate Change for Canada. nrtee-trnee.ca/climate/climate-prosperity/the-economic-impacts-of-climate-change-for-canada/paying-the-price

[12] Province of BC. Climate Action Charter. www.cscd.gov.bc.ca/ministry/whatsnew/climate_action_charter.htm

The Province has required all communities to set a greenhouse gas reduction target and adopt policies supportive of achieving the target. In setting its target, the City of Kelowna emulated the Provincial target and adopted the following policy into the Official Community Plan:

> ***Objective 6.2*** *Improve energy efficiency and reduce community greenhouse gas emissions.*
>
> ***Policy 6.2.1 GHG Reduction Target and Actions****. The City of Kelowna will, in partnership with: senior governments; local residents and businesses; NGOs; external agencies; and utility providers, work towards reducing community greenhouse gas emissions by 33% (from 2007 levels) by 2020.*
>
> *The City of Kelowna's efforts will be focused on creating more mixed use neighbourhoods (as identified on the OCP Future Land Use map) and on ensuring that residents can conveniently and safely travel by bus or by foot, bicycle and other forms of active transportation to get to major community destinations while ensuring the efficient movement of goods and services.*

> *The City will support the reduced use of fossil fuels in buildings by encouraging renewable energy supplies, district energy systems and energy efficient technologies in new and existing buildings. By working with senior government partners, regulated utilities and others, the City will lead through example and strive to meet the BC Climate Action Charter targets for the reduction of GHG emissions from municipal infrastructure.*

The 2030 Official Community Plan indicates not only the commitment to reducing our community's greenhouse gases by 33% by 2020 but provides policies aimed to create "a long-term sustainable community by encouraging efficient land use, providing infrastructure and facilities that will support walking, cycling and transit in a more compact and connected community.[13]"

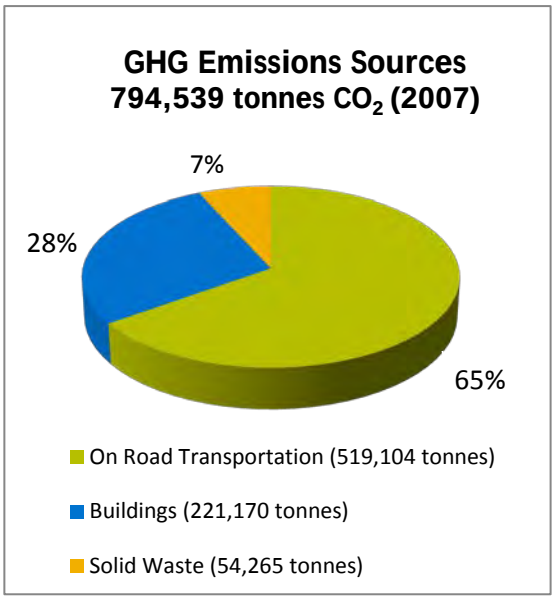
The 33% target was consulted on initially in November 2009, prior to the goal being adopted into the OCP. At that time, in the absence of knowing the specifics on the actions that would be required to achieve the target, of the 128 people providing responses, 95% agreed with the proposed policy. The goal was revisited during the 2011 stakeholders, businesses and public consultation sessions (which reviewed proposed reduction initiatives needed to reach the target). Of the 66 participants, 60% still believed the 33% reduction was achievable.

The City of Kelowna recognizes that the 33% reduction target is an ambitious goal. Many other BC communities have also committed to the same 33% target including all other Central Okanagan municipalities. The City of Vancouver has also committed to the 33% goal as well as to becoming the greenest city in the world by 2020! Others have gone beyond, such as the City of Kamloops which has a goal of 40% reduction below 2007 levels by 2020.

[13] Kelowna 2030 Official Community Plan, 2011. Page 1-2.

4. Kelowna's Current and Future GHG Emissions

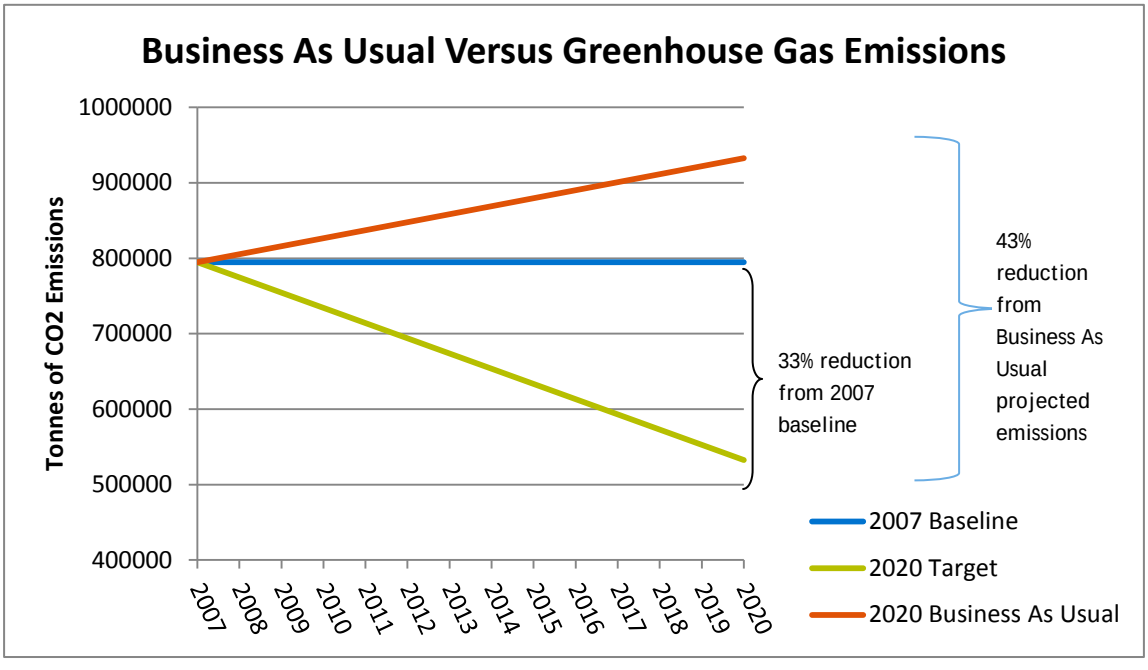
As part of the Province's commitment to reduce greenhouse gases, Community Energy and Emissions Inventories (CEEI) have been provided for all municipalities and regional districts in BC. These inventories include emissions for on-road transportation, buildings and solid waste. The inventory does not include emissions for air or rail traffic, agriculture or large industrial operations.



In 2010, the Province released Kelowna's CEEI for the 2007 base year (Appendix 1) showing a total of 794,539 tonnes of greenhouse gases released by the community (7.3 tonnes per capita). The total greenhouse gas emissions for the community is equivalent to 132,000 full size trucks driving 20,000 km annually.[14]

On-road transportation represents the largest source of emissions contributing 519,104 tonnes (65%). Buildings contribute 221,170 tonnes of greenhouse gases (28%) and emissions from solid waste contribute 54,265 tonnes (7%).

The Province plans to produce CEEI reports every 2 years providing Kelowna an opportunity to track greenhouse gas emission reductions. The Province is currently finalizing the 2010 CEEI data and will be providing this information to municipalities in 2012.



[14] Information obtained from Natural Resource Canada fuel consumption ratings at http://oee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-search.cfm?attr=8 and is based on a full size 2010 truck emitting 6 tonnes of CO_2 when driving 20,000 km annually

Based on the projected population growth, it is estimated that continuing "business as usual" and not taking any action, emissions will reach over 932,510 tonnes of greenhouse gases by 2020. In order to reach the goal, emissions must be reduced by 400,169 tonnes (43%) below the business as usual level projected for 2020. This will achieve the 33% emissions reduction target of 530,427 tonnes. To put this into perspective, to achieve the goal each resident would have to cut their annual emissions in half from 7.3 tonnes per capita to 3.7 tonnes per capita – a 3.6 tonne/capita reduction.

How Can You Reduce Your Emissions by 3.6 tonnes?[15]

Below are some actions Kelowna residents can take to reduce their greenhouse gas emissions, and in the process save money and get healthier!

1.	Reduce vehicle kilometers travelled by 20% annually	1.1 tonnes
2.	Improve vehicle fuel efficiency by 2 litres/100 km	0.9 tonnes
3.	Maintain vehicle, have proper tire pressure, obey speed limits, don't drive aggressively	1.0 tonnes
4.	Reduce idling by 3 minutes per day	0.1 tonnes
5.	Reduce natural gas consumption by 10%	0.5 tonnes
6.	Reduce electrical consumption by 10%	0.03 tonnes
	TOTAL	**3.6 tonnes**

While this may seem daunting, these reductions are achievable. Communities such as Vancouver and Victoria are already over 2.5 tonnes per capita lower than Kelowna, mainly due to greater efficiencies from transportation choices.

5. Kelowna's Community Climate Action Plan

5.1 Developing the Plan

The City of Kelowna has been diligently working on creating a more sustainable Kelowna through adopting a new Official Community Plan, building multi-modal pathways, investing in transit and investigating alternative energy sources. The Community Climate Action Plan outlines reduction initiatives the City, senior government and utilities can implement to achieve a 33 percent reduction in community greenhouse gases by 2020.

The initiatives and associated greenhouse gas reductions were initially determined and calculated by Hyla Environmental Services as part of a *Community Climate Action Discussion Paper*. The ideas presented in the discussion paper underwent consultation. The results from the consultation were then used to draft Kelowna's Community Climate Action Plan.

Reductions fall into the following categories:

Category	**Reduction (tonnes)**	**Percentage of Total**
The Way We Get Around (Transportation)	216,651	54.1%
The Energy We Use (Buildings)	36,199	9.1%
Planning Our Community	31,450	7.9%
The Waste We Create	49,022	12.2%
Further Senior Government Initiatives and/or new technology	66,847	16.7%
TOTAL	**400,169**	**100%**

Local and senior government, utility companies, businesses and residents working together to implement all of the identified reduction initiatives will get Kelowna 83% of the way to the 33%

[15] Calculation assumptions include: Vehicle travelling 20,000 km per year with a fuel economy of 12L/100km. Electrical energy is based on 10% of 13,000 kW hour used by an average Kelowna household. Natural gas energy is based on 10% of 95 gigajoules of natural gas used by an average Kelowna household.

target. Innovative technology and further rigorous senior government initiatives will be required in order to bridge the final gap. This is not unlike the Provincial Climate Action Plan, which identifies strategies to achieve 73% of the 33% reduction provincial reduction target.[16]

5.2 Public Consultation

There have been numerous opportunities for consultation on Kelowna's greenhouse gas emissions reduction target including:

Date	Consultation
November 2009	OCP Consultation
September 2010	Survey on Transportation Choices at Car Free Day
November 2010	Mayor's Youth Forum on Climate Action (including survey of over 600 students)
October 2010 to January 2011	City Staff Workshops and Consultation Utility Consultation
Spring 2011	Climate Action Barriers Survey (Statistically Valid)
Spring 2011	Three Climate Action Workshops targeted at stakeholders, businesses and the public
November 2011 to March 2012	Staff Review and Input
March 2012	Pubic Open House and Online Survey

- **Staff Consultation**
  There has been significant staff consultation during the development of the Community Climate Action Plan. As part of an initial review, over 125 City staff participated in a half day Climate Action Staff Workshop to increase staff's knowledge of climate action as well as to collaborate and brainstorm on climate action initiatives.

  Numerous staff from various departments have also been consulted throughout the development of the Plan to ensure the reduction initiatives and action items are achievable and can be incorporated into the appropriate department's work plans and budget submissions. Fourteen departments (including, but not limited to, Infrastructure Planning, Regional Services, Communications, Development Services and Parks) and over thirty-five staff have been involved in some portion of the review process of the Community Climate Action Plan. These departments are integral to implement various action items in the Plan.

- **Public Consultation**
  A variety of tools were utilized to maximize citizen engagement:
  - Over 600 youth (representing 25% of their age group) were surveyed through the Mayor's Youth Forum.
  - Overall public attitudes were assessed through a statistically valid survey. The survey examined barriers that impede citizens from changing behavior as well as opportunities where people are most likely to make changes;
  - Climate action workshops in 2011 targeted at stakeholders, business and the public; and
  - An open house and online survey in 2012 to obtain feedback on the draft plan.

- **Stakeholder Consultation**
  Involvement of key stakeholders such as FortisBC and Interior Health Authority (IHA) were established early in the process. It was identified that many of the reduction initiatives in

[16] Province of BC, 2008. **Climate Action Plan**. www.livesmartbc.ca/attachments/climateaction_plan_web.pdf

the Community Climate Action Plan were also being moved forward by these stakeholders. For example, IHA is working on health and active transportation and FortisBC is continually working to lower natural gas and electrical consumption. Both of these stakeholders have provided support letters for the Community Climate Action Plan (see Appendix 2).

Throughout the consultation process, the plan has been amended to incorporate stakeholder, business and public feedback. The draft Plan was available for comment at the March 2012 Open House and through an on-line survey. The overall results showed high support for the Community Climate Action Plan. More than 88% of those who provided input either agreed or had no opinion on 14 out of 16 of the reduction initiatives and targets. Appendix 3 provides the results of this consultation.

5.3 Leadership

Realizing the goal will take the cooperation and dedication of the City, federal government, provincial government, and utility companies to provide new programs, opportunities, infrastructure and incentives. While these groups can provide infrastructure and policy to set the direction to achieve the goal, the role of the community is crucial in making the target a reality. The key to success will be a public shift in behaviors embracing the new opportunities that will be offered over the next decade. From choosing active transportation to selecting efficient consumer choices to exerting effort to reducing home energy use, the public's involvement will not only reduce greenhouse gases but also improve community health and resilience.

Not only can the City help craft policy and provide infrastructure to meet the target, but the City can lead through example and demonstrate to the community how to lower emissions, a process already begun through the Corporate Energy and GHG Emissions Plan (2011). Whether it's through retrofitting existing municipal buildings, increasing the efficiency of the vehicle fleet or implementing a corporate bike fleet, the City can help inspire others by highlighting new opportunities and demonstrating innovative action.

> *"…by working with senior government partners, regulated utilities and others, the City will lead through example and strive to meet the BC Climate Charter targets for the reduction of GHG emissions from municipal infrastructure."*
>
> OCP 2030, Policy 6.2.1

5.3 The Plan

A list of actions has been developed for each reduction initiative identified in the Plan. While each of these actions may not have a measurable CO_2 reduction, they are all integral to the success of the Plan. Actions have been identified in three categories:

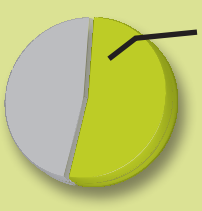
- Actions that will be initiated in 2012 (summarized in Appendix 4)
- Actions that will be brought to Council for budget consideration in 2013 (summarized in Appendix 5)
- Actions to be implemented between 2014 and 2020

The actions identified for implementation in 2012 have already been budgeted. Those actions identified for 2013 will be brought to Council for budget consideration during the 2013 budget process. The lead department will request the necessary funds, or recommend the reallocation of existing budgets to accommodate. This request will also need to include resources from all supporting departments including communications. The degree to which 2013 items can be implemented will be dependent on Council budget decisions.

A review will be completed in 2013 to determine accomplishments and to recommend to Council which remaining actions should be slated for subsequent implementation.

SUMMARY OF REDUCTION INITIATIVES TO MEET A 33% REDUCTION IN COMMUNITY GREENHOUSE GASES BY 2020

The Way We Get Around
(Transportation)

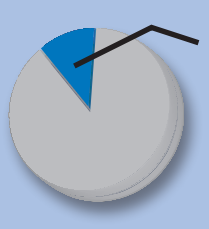


54.1% of Total Kelowna GHG Reductions

= 216,651 tonnes

Action	Partners[1]	Target	Reduction (tonnes)[2]	% of reduction
Reduce vehicle kilometers travelled by 20% per capita	LG, SG, B, R	Use a combination of initiatives such as transit, walking, cycling, carpooling to reduce vehicle kilometers travelled by 20% per capita.	134,490	33.6%
Right sizing vehicles	LG, SG, B, R	Promote consumer purchases to achieve a target of 15% fewer trucks, 7.5% fewer large cars (to be replaced with an equivalent amount of small passenger cars).	54,702	13.7%
Implement stricter tailpipe emission standards	SG	Implement stricter emissions controls on passenger vehicles after 2016, with potential annual improvements of 6% for 2017 model vehicles and later.	8,787	2.2%
Encourage emission complaint vehicles	LG, SG, B, R	Encourage the purchase of greenhouse gas emission standard compliant vehicles (2011 model years and later) to those replacing a vehicle to achieve a 10% increase in greenhouse gas emission standard compliant vehicles by 2020.	8,540	2.1%
Improve vehicle maintenance and change driving habits to improve fuel efficiency	LG, SG, B, R	Encourage the public to undertake regular vehicle maintenance, maintain proper tire pressure and to not drive aggressively.	5,066	1.3%
Reduce idling	LG, SG, B, R	Promote programs to reduce idling and develop an anti-idling bylaw.	5,066	1.3%

The Energy We Use
(Buildings)

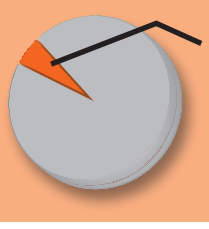


9.1% of Total Kelowna GHG Reductions

= 36,199 tonnes

Action	Partners[1]	Target	Reduction (tonnes)[2]	% of reduction
Improve energy efficiency in new buildings	LG, SG, U, B, R	Achieve an EnerGuide rating of 80 for 100% of new, detached and single-unit row houses. Achieve the energy performance outlined in the new federal Model National Energy Code for 100% of new multi-unit residential, commercial, institutional and industrial buildings.	16,846	4.2%
Utilize bio-methane for residential heating	LG, U, R	Develop a facility at the Glenmore Landfill to recover landfill gas and upgrade it to pipeline-grade methane for heating residential homes. The reduction is based on 1600 homes using landfill gas bio-methane by 2020.	7,171	1.8%
Improve energy efficiency in existing buildings	LG, SG, U, B, R	Reduce natural gas and electrical energy consumption in existing buildings by 3% below 2007 levels.	6,635	1.7%
Install district energy	LG, SG, U	Implement district energy for City Centre and South Pandosy.	4,535	1.1%
Increase building efficiencies through compact development	LG, B, R	Achieve an annual incremental increase in compact development such that the proposed densification targets for new residential buildings will be consistent with the 2030 Official Community Plan.	1,012	0.3%

Planning Our Community

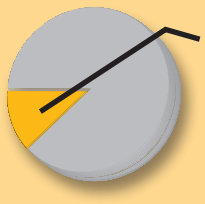


7.9% of Total Kelowna GHG Reductions

= 31,450 tonnes

Action	Partners[1]	Target	Reduction (tonnes)[2]	% of reduction
Maintain and improve urban forest	LG, SG, R, B	Maintain existing urban forest; and City Parks to plant 25,600 trees by 2020 (a combination of seedlings and 2-3" caliper trees).	23,694	5.9%
Achieve municipal carbon neutral governance	LG, SG	Implement Corporate Energy and GHG Emissions Plan and investigate offsets to become carbon neutral.	7,756	1.9%
Develop municipal policies and programs to achieve a low carbon community	LG	Implement policies outlined in the Kelowna 2030 Official Community Plan that are consistent with reducing green-house gas emissions and investigate the implementation of a development permit area for energy conservation.	N/A	N/A

The Waste We Create

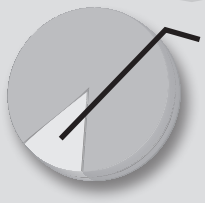


12.2% of Total Kelowna GHG Reductions

= 49,022 tonnes

Action	Partners[1]	Target	Reduction (tonnes)[2]	% of reduction
Achieve Regional Solid Waste Management Plan Targets	LG, SG, B, R	Design and implement programs within the framework of the Central Okanagan Solid Waste Management Plan with the goal of exceeding diversion targets of 58% to 66% by 2023; and capture 50% of landfill gas with 70% efficiency.	49,022	12.2%

Senior Government and/or New Technology



16.7% of Total Kelowna GHG Reductions

= 66,847 tonnes

Action	Partners[1]	Target	Reduction (tonnes)[2]	% of reduction
Senior Government and/or New Technology	SG	Senior government to implement additional policies and programs not mentioned in this plan to further reduce greenhouse gas emissions. New technology to continue to increase efficiencies to reduce energy consumption in all sectors (gas, electricity and natural gas).	66,847	16.7%

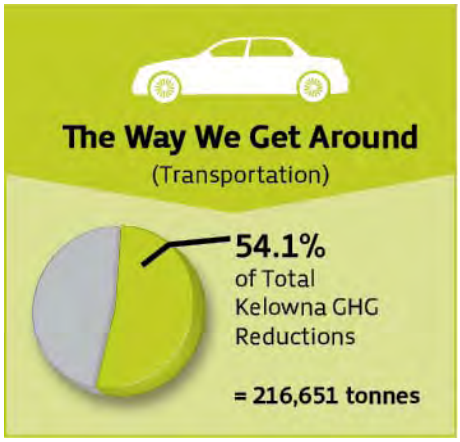
[1] LG = Local Government
SG = Senior Government
U = Utility Companies
B = Businesses
R = Residents

[2] Reduction initiatives and quantities are provided by Hyla Environmental Services "Draft Climate Action Discussion Paper: Foundation for a Community Climate Action Plan," 2010

City of Kelowna

TOTAL REDUCTION INITIATIVES
400,169 Reduction (tonnes)
33% Reduction from 2007 levels

05/12



6. The Way We Get Around
Transportation

Actions

- Reduce vehicle kilometers travelled by 20%
- Right sizing of vehicles (smaller vehicles)
- Implement stricter tailpipe emission standards
- Encourage emission compliant vehicles
- Improve vehicle maintenance
- Reduce idling

Transportation emissions are the largest source of greenhouse gases in Kelowna, accounting for over 65% of all GHG emissions in 2007, and provide the largest opportunity for greenhouse gas reductions.

According to a recent Transportation Association of Canada report, Kelowna has the highest per capita ownership of light duty vehicles (second highest for heavy duty vehicles) of 33 Canadian municipalities reviewed. The same study identified Kelowna as having the second highest number of daily trips per capita.[17] This, in conjunction with our high single occupant commuting habits (nearly 80% as single occupant drivers[18]) demonstrates Kelowna is a very car dependent jurisdiction.

Changing transportation habits benefits both individuals and the community. As gas prices continue to rise, residents can save money. Additionally, residents can experience less commuting stress, improve health and enjoy more social interactions. The community benefits include improved air quality, safer roads, stronger neighbourhoods, and more affordable infrastructure.

Local governments have limited influence over vehicle choice and fuel consumption. However, they have significant control over land use and transportation planning which shapes transportation choices and influences distances driven. To meet the demands of Kelowna's future population and traffic growth, a shift in focus from moving vehicles to moving people through an increase in transit and active transportation (not using fuel-powered vehicles; e.g. walking, biking, etc.) is required. Nearly one-third of the total reduction required to meet the 33% target can be achieved just by getting people to drive 20% less.

While it may be a challenge to get people out of their vehicles one day per week, several surveys have shown a public willingness to lower emissions from driving. A variety of opportunities exist to reduce emissions from vehicles including selecting the right size vehicle (smaller and/or more fuel efficient), keeping it well maintained and reducing idling. It should be noted, however, that combining all of these types of initiatives, without driving less, reduces emissions by 82,161 tonnes, while focusing solely on reducing vehicle kilometers travelled by 20% can achieve a reduction nearly 1.5 times that (134,490 tonnes).

Kelowna's Official Community Plan 2030 sets the stage to reduce car dependency by providing policies that focus on creating more mixed-use, compact neighbourhoods to ensure residents can conveniently and safely travel by bus or by foot, bicycle and other forms of active transportation to get to major community destinations. The actions and responsibilities outlined in the following sections build on the policies set out in the OCP.

[17] Transportation Association of Canada, 2010. Urban Transportation Indicators, Fourth Survey. www.tac-atc.ca/english/resourcecentre/readingroom/pdf/uti-survey4.pdf , page 31, 60 and 62.
[18] Province of BC. Community Energy and Emissions Inventory, www.env.gov.bc.ca/cas/mitigation/ceei/index.html

Reduction Initiative:	**REDUCE VEHICLE KILOMETERS TRAVELLED BY 20% PER CAPITA**
Target:	Use a combination of initiatives such as transit, walking, cycling, carpooling to reduce vehicle kilometers travelled by 20% per capita
Reduction potential:	134,490 tonnes CO_2
Partners:	Local Government, Senior Government, Businesses, and Residents

Description

The greatest impact on reducing community greenhouse gas emissions can be achieved by reducing vehicle kilometers travelled (VKT) by 20% per capita. Utilizing a combination of initiatives such as decreasing the number of trips and using alternative forms of transportation has the potential to reduce emissions by 134,490 tonnes. An interim target has been set to reduce VKT by 10% by 2016. The interim target will ensure that the City is on track to meet the 2020 target.

Examining the data for Kelowna from the 2007 Household Travel Study showed that 68% of trips were made by drivers travelling alone. Auto passenger trips are the next most common mode and account for nearly 20% of trips. Walking is the most common active transportation at over 5% and cycling accounts for nearly 3% of trips. Transit only accounted for 1.5% of the trips, lower than what BC transit estimated at 2.8%.

Looking further at the data showed that 32.5% of all trips made in Kelowna (excluding going home) were work related, while getting to school accounted for over 9% of trips. The remaining trips were for purposes such as shopping, personal business or dropping off or picking someone up. This mode split presents a challenge in targeting programs to reduce VKT as programs need to be directed at both work and personal trips.[19]

Despite the key finding that vehicle emissions and pollution are among the most important issues facing the community (second below water contamination)[20] only half of those surveyed in the Climate Action Barriers Survey said they would change their driving habits if barriers could be eliminated. They would make more use of public transit, walking and cycling if the following barriers could be eliminated:

- transit barriers: inadequate infrastructure, schedules, frequencies, transfers, penetration of bus routes into residential neighbourhoods, inconvenience
- cycling barriers: topography, distance, safety, health, age-related issues and lack of end of trip facilities

Local Business Changes their Driving Habits and Saves Money

Sysco, a food service distributor in Kelowna, embarked on a "Green Routing" program to reduce fuel use, traffic congestion and help the environment. Green routing takes existing standard routes and re-sequences them to reduce kilometers driven.

The results are impressive. Sysco Kelowna achieved a 14% reduction in vehicle kilometers travelled. The shorter, more direct routes also provide better customer service and have a positive impact on the bottom line, proving the business case for more sustainable practices.

Sysco is further trying to improve their numbers and have issued a challenge to its drivers to try to save even more fuel.

Source: Sysco Kelowna and Don Frank Pers. Comm..

[19] Synovate, 2007. 2007 North and Central Okanagan Household Travel Survey

[20] City of Kelowna Climate Action Barriers Study. CRA West and Corporate Research Associates Inc. 2011

The City recognizes that different strategies will be required for different areas and is already working to make it easier for people to leave their vehicles at home. Some of the City's policies and programs include:

- 2030 Official Community Plan (OCP) Policy 7.6.1, Transportation Infrastructure Priority, has prioritized active transportation and transit over vehicle usage when funding, constructing and maintaining infrastructure;
- Annually increasing the amount of sidewalks and bike lanes (City currently has 425 kilometers of bike paths); and
- The City has endorsed BC Transit's *Transit Future Plan* for the Central Okanagan which calls for an increase in ridership to 7% by 2035.

Recent feedback showed that 91% agree with the goal of reducing vehicle kilometres travelled by 20%. A shift in focus from moving vehicles to moving people is necessary to achieve this. Other communities already have significantly higher proportion of their population using alternative transportation. Comparing mode share with residents in the Capital Regional District (CRD) for instance, shows a split of 13% walking, 6% transit and 3% cycling. The CRD has set targets to continue to increase these modes to 14% walking, 10% transit and 4% cycling by 2020.[21]

The following table outlines initiatives that can be used to reduce vehicle kilometers travelled.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	1. Develop procedures and policies to implement OCP Policy 7.6.1, Transportation Infrastructure Priority, which prioritizes walking, biking and transit over vehicles. ONGOING	x*							
	2. Complete Regional Active Transportation Plan	x*							
	3. Initiate a Parking Management Strategy where the pricing structure shows the true cost of parking; where the cost of parking for an hour at a municipal facility exceeds the price of a single transit trip; and where cash-in-lieu pricing is included as per OCP Policies 7.11.1 and 7.11.2	x*							
	4. Increase pedestrian and cycling infrastructure and maximize connectivity, as per OCP Policy 5.10.1 and 5.10.3 and OCP Objective 7.8. ONGOING	x*							

[21] Capital Regional District. The Regional Sustainability Strategy. sustainability.crd.bc.ca/status-reports/transportation/travel-behaviour/percentage-of-all-trips-transit.aspx

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
	5. In cooperation with BC Transit, work towards providing efficient and effective transit infrastructure and facilities as per OCP Policies 7.9 and 5.10.2 including transit priority, expansions and service levels. ONGOING	x*			x*				
	6. Implement infrastructure upgrades recommended in Glenmore Elementary School Travel Plan	x*				X	x*		
	7. Pilot a Neighbourhood Trip Planning Program	x*							
	8. Continue to raise awareness of transit programs, bike networks and pedestrian networks for trip planning via web (e.g.: Google maps), maps, social media and ongoing TDM social marketing programs (e.g. Bike to Work Week, Neighbourhood Trip Planning, etc). ONGOING	x*			x*				
	9. Develop a TDM plan for employee commuting at Kelowna General Hospital	x				x*			
	10. Implement policy changes and provide funding and resources for programs that will help reduce VKT		x*	x*					
	11. Investigate distance based insurance programs. ONGOING			x*					
2013 Proposed Actions	Investigate additional actions to take by 2020 to achieve the 20% reduction in VKT	x*							
	Determine a method of tracking the success of reducing vehicle kilometers travelled by 20%	x*							
	Develop a City wide Active Transportation Master Plan	x*							
	Investigate the possibility of instituting a Regional Fuel Tax that would be directed to expansion and improvement of the regional transit system and/or alternative forms of transportation.	x*		x					x
	Develop Parking Management Plan Implementation Plan	x*							
	Ensure new arterial and major collector roads are built as complete streets that incorporate sidewalks and bike lanes as per OCP Policies 7.6.2 and 5.10.1	x*							
	Ensure development includes the provision of sidewalks, trails and bike lanes to maximize pedestrian and cycling connectivity, where appropriate, as per OCP Policies 5.10.1 and 5.10.3	x*							
	Plan a public bike share system	x*							
	Develop and implement School Travel Plans for one to two schools per year	x*				x	x*		
	Develop a TDM employer's toolkit for employers to encourage large employers to fund TDM initiatives for their employees instead of providing free or subsidized parking.	x*				x			
2014 – 2020 Proposed Actions	Support parking management programs that promote reduced vehicle ownership, reduced vehicle trips and increased use of active modes of transportation as per OCP Objective 5.11 including parking relaxations OCP Policy 5.11.1 including: • Update Section 8 of the Zoning Bylaw to increase the bike parking, facilities and parking spaces	x*							

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
	Implement recommendations from City wide Active Transportation Master Plan	x*							
	Implement a public bike share system	x*							
	Develop procedures for managing vehicle congestion resulting from the reprioritizing of road space.	x*							
	Continue to ensure new arterial and major collector roads are built as complete streets that incorporate sidewalks and bike lanes as per OCP Policies 7.6.2 and 5.10.1	x*							
	Continue to ensure development includes the provision of sidewalks, trails and bike lanes to maximize pedestrian and cycling connectivity, where appropriate, as per OCP Policies 5.10.1 and 5.10.3	x*							
	Continue to develop and implement School Travel Plans for one to two schools per year	x*				x	x*		

Reduction Initiative:	**RIGHT SIZING VEHICLES**
Target:	Promote consumer purchases to achieve a target of 15% fewer trucks, 7.5% fewer large cars (to be replaced with an equivalent amount of small passenger cars)
Reduction potential:	54,702 tonnes CO_2
Partners:	Local Government, Senior Government, Businesses, and Residents

Description

In 2007, there were over 78,000 vehicles on the road in Kelowna. The largest proportion (43%) of these vehicles was the light trucks, vans and SUVs category. Small passenger cars accounted for only 32% of vehicles and large passenger vehicles accounted for 19%. Assuming per capita ownership remains constant, by 2020 there could be nearly 18,000 additional vehicles on the road.

Category	Amount	%
Small Passenger Cars	25,224	32%
Large Passenger Cars	14,895	19%
Light Trucks, Vans, SUVs	33,672	43%
Other	4,690	6%
TOTAL	**78,481**	

Source: Community Energy and Emissions Inventory

The amount of greenhouse gases emitted by a vehicle is greatly influenced by the type of vehicle. For example, a small compact vehicle such as the 4 cylinder Toyota Corolla driving 20,000 km in a year would produce 3.1 tonnes of greenhouse gas. An 8 cylinder Chevrolet Silverado 4WD truck driving the same 20,000 km would produce over double the emissions (6.4 tonnes).[22]

Many people do not require the size of vehicle they currently have. For instance, numerous families drive seven-passenger vans, yet only carry extra passengers a few times per month. Many truck owners only need a truck a few times per year (e.g. for landfill trips), but drive it daily. Selecting the right size of vehicle can result in significant savings. Comparing the same two vehicles above, it costs nearly $1500 more in fuel per year to operate the truck than it does the car.[23] As fuel prices rise, this differential will increase.

Right sizing the City fleet has reduced emissions and operating costs.

While vehicle choice is largely market driven, the potential GHG emissions reductions can be significant and therefore the City could play a role in the promotion of right sizing vehicles (selecting the size of vehicle that best meets daily needs while maximizing fuel economy). Further, a cooperative auto network (car/truck share) program would allow residents to own smaller, fuel efficient vehicles for daily commutes while having access to larger trucks and vans for occasional trips.

During the consultation process, residents stated they could be encouraged to right size their vehicles with:

- Financial incentives for fuel-efficient vehicles
- Changes to vehicle insurance – increased rates for larger vehicles
- Parking – preferred parking, reduced rates, smaller spaces for more fuel efficient vehicles
- Cooperative Auto Network – access to a larger vehicle available when required
- Education campaign[24]

[22] Natural Resource Canada. Fuel Consumption Ratings. hoee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-search.cfm?attr=8
[23] Natural Resource Canada. Fuel Consumption Ratings. hoee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-search.cfm?attr=8
[24] City of Kelowna, 2011. Climate Action Workshop Results. www.kelowna.ca/CityPage/Docs/PDFs//Environment%20Division/Climate%20Change/2011%20Climate%20Action%20Workshops%20Results.pdf

Creating programs and adopting policies to influence the types of vehicles that are driven can reduce greenhouse gas emissions. Nearly 55,000 tonnes can be reduced by promoting consumer purchases to achieve a target of:

- 15% fewer light trucks, vans and SUVs (over 6,200 fewer)
- 7.5% fewer large cars (over 1,380 fewer)
  (Assuming these would be replaced with an equivalent amount of smaller passenger cars.)

Overall, these reductions would result in a vehicle mix of: 37% light trucks, vans and SUVs, 18% large passenger cars, and 40% small passenger cars on the road in 2020 (other classes make up the remainder). Other sprawling communities like Surrey, Richmond and the Capital Regional District have already achieved a mix equal to or better than the target Kelowna is trying to achieve.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	12. Continue to offer existing incentives programs, as well as design and implement new education and incentive programs promoting the purchase of right-sized vehicles. ONGOING	x	x*	x*					
2013 Proposed Actions	Investigate the feasibility of electric charging stations in urban core and urban centres and implement if feasible	x							
2014 – 2020 Proposed Actions	Through the Parking Management Strategy encourage the right sizing of vehicles by: • Encouraging preferred or dedicated parking stalls for share cars, hybrids and/or electric vehicles for all developments as per OCP Policy 5.11.3 • Updating Section 8 of the Zoning Bylaw to increase allowable small car parking stalls	x*							
	Support the formation of Cooperative Auto Networks (Car/truck share)	x*							**x**
	Investigate implementing a transferable insurance program where residents / businesses can transfer insurance between vehicles			x*					
	Investigate implementing a tax increase on non fuel efficient light duty passenger vehicles (i.e.: those that do not meet a specified minimum liters per 100 km)		x*						

Reduction Initiative:	**IMPLEMENT STRICTER TAILPIPE EMISSION STANDARDS**
Target:	Federal government to implement stricter emissions controls on passenger vehicles after 2016, with potential annual improvements of 6% for 2017 model vehicles and later
Reduction potential:	8,787 tonnes CO_2
Partners:	Senior Government

Description

In 2010, the federal government adopted stringent greenhouse gas emissions standards for new passenger automobiles and light trucks for the 2011 – 2016 model years. Aligned with similar US regulations, it is projected that the average GHG emissions of new 2016 vehicles will be about 25% lower than the vehicles sold in 2008.[25] The average 2008 Canadian vehicle consumed 8.6 litres of fuel in 100 km and by 2016 this will be improved to 6.6 L/100 km.[26] As this is already underway, the reduction has been accounted for in the GHG emissions forecast.

The federal government has also issued a Notice of Intent regarding its commitment to continue to work with the US for tougher standards for 2017 light vehicle models and later. Canada and the U.S. will continue to undertake technical assessment of potential annual improvements in GHG emission performance of up to 6%.[27] If successful these more stringent emissions controls will result in 8,787 tonne CO_2 reduction.

In addition, Environment Canada is also working with the United States to develop tighter emissions standards for heavy-duty vehicles.[28]

Actions and Responsibilities

Notes: * denotes lead department/organization

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2014 – 2020 Proposed Actions	Implement stricter emissions controls on passenger vehicles 2017 and later.		x*						

[25] Environment Canada, 2010. Canada Announces Final GHG Emission Regulations for New Light-Duty Vehicles. www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=3C7732ED-B2B7-4E45-8A54-A495500E58DB

[26] CBC News, 2010. Canada, U.S. Unite on Car Emission Standards. www.cbc.ca/news/canada/story/2010/04/01/vehicle-emissions-ottawa-washington.html

[27] Environment Canada, 2010. Canada Announces Final GHG Emission Regulations for New Light-Duty Vehicles. www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=3C7732ED-B2B7-4E45-8A54-A495500E58DB

[28] Environment Canada. Canada's Action on Climate Change Fact Sheet. www.climatechange.gc.ca/default.asp?lang=En&n=D43918F1-1

Reduction Initiative:	**ENCOURAGE EMISSION COMPLIANT VEHICLES**
Target:	Encourage the purchase of greenhouse gas emission standard compliant vehicles (2011 model years and later) to those replacing a vehicle to achieve a 10% increase in greenhouse gas emission standard compliant vehicles by 2020.
Reduction potential:	8,540 tonnes CO_2
Partners:	Senior government, Local government, Business and Residents

Description

With the implementation of the new Federal greenhouse gas emissions standards for new passenger automobiles and light trucks, on average new vehicles will become more efficient and produce fewer greenhouse gases. Further, new technology offers consumers more options to improve vehicle efficiency.

Older vehicles can contribute significantly more greenhouse gases than newer vehicles. For example replacing a 1990 sedan with a 2009 hybrid can reduce greenhouse gas emissions by up to 67%. In addition, getting older vehicles off the road greatly reduces smog forming emissions. Studies have shown that vehicles manufactured before 1995 can emit up to 19 times more emissions than 2004 or later models.[29]

The provincial Scrap-It Program provides incentives for qualifying vehicle owners to get rid of their vehicles and switch to a less polluting form of transportation such as a low emission vehicle, transit, bicycle or car-share.[30]

The City, in conjunction with senior governments, should encourage those ready to dispose or replace their older vehicle with either alternative transportation forms or emission standard compliant vehicles. Achieving a ten percent increase in greenhouse gas emissions standard compliant vehicles by 2020 can reduce greenhouse gases by 8,540 tonnes.

The BC SCRAP-IT program targets getting older vehicles off the road and replacing with more efficient options.

Actions and Responsibilities

Many of the initiatives outlined in the "Right Sizing Vehicles" section would also apply here, ensuring the most fuel efficient replacement for the older vehicle.

Notes: * denotes lead department/organization

[29] BC Scrap It Program. http://www.scrapit.ca/
[30] Live Smart BC. Transportation Rebates and Incentives. www.livesmartbc.ca/incentives/transportation/index.html

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	13. Continue incentive programs, such as the Scrap It Program, to encourage residents to get older vehicles off the road. ONGOING			x*					
	14. Encourage the purchase of a greenhouse gas emission standards compliant vehicle to those disposing or replacing a vehicle. ONGOING	x		x*					
2014 – 2020 Proposed Actions	Investigate developing a policy for new gasoline stations to offer at least one alternative fuel, similar to the bylaw the City of Surrey is currently developing	x*							

Reduction Initiative:	**IMPROVE VEHICLE MAINTENANCE AND CHANGE DRIVING HABITS TO IMPROVE FUEL EFFICIENCY**
Target:	Encourage the public to undertake regular vehicle maintenance, maintain proper tire pressure and to not drive aggressively
Reduction potential:	5,066 tonnes CO_2
Partners:	Senior Government, Local Government, Businesses, and Residents

Description

Fuel consumption is determined by the type of vehicle and the distance it is driven. It can also be influenced by how a vehicle is driven and how it is maintained. Encouraging residents to undertake regular vehicle maintenance, maintain proper tire pressure, observe speed limits and reduce aggressive driving is an easy way to lower vehicle emissions.

Aggressive driving as characterized by speeding, quick acceleration, and hard stops, can increase fuel consumption by up to 25%. Further, air conditioning can increase fuel consumption by up to 20% depending on the type of vehicle.[31]

Ensuring a vehicle is properly maintained will save fuel and money – as fuel consumption can increase by as much as 15% in a poorly maintained vehicle. Keeping tires properly inflated as part of the maintenance can also reduce fuel consumption and increase life of the tire. For example, a tire under-inflated tire by 8 psi can reduce the life of the tire by 15,000 km and increase a vehicle's fuel consumption by 4%.[32]

Greenhouse gas emissions can be reduced by 5,066 tonnes through the public undertaking regular maintenance, maintaining proper tire pressure and not driving aggressively.

88% of the people surveyed at the 2010 Car Free Day, are already or are willing to have their vehicle checked and maintained twice per year. A similar survey of youth as part of the Mayor's Youth Forum on Climate Action resulted in the same percentage that are already or are willing to ensure their vehicle was properly maintained.[33]

[31] Natural Resources Canada. Auto $mart Thinking Fuel Efficient Driving Tips. oee.nrcan.gc.ca/transportation/personal/driving/autosmart-tips.cfm?attr=8

[32] Natural Resources Canada. Quick Tips on Auto $mart Vehicle Maintenance, oee.nrcan.gc.ca/transportation/personal/maintaining/vehicle-maintenance.cfm?attr=8

[33] Marathon Communications Inc., 2010. City of Kelowna's 10th Mayor's Youth Forum. www.kelowna.ca/CityPage/Docs/PDFs/%5CCommunity%20Info%5CYouth%20Forum/2010-11-16_YouthForum_Report.pdf

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	15. Encourage residents to undertake regular vehicle maintenance and proper tire pressure. ONGOING	x	x*	x					**x**
2014 – 2020 Proposed Actions	Explore options for emissions testing/regulations of vehicles sold/resold			x*					

Reduction Initiative:	**REDUCE IDLING**
Target:	Promote programs to reduce idling and develop an anti-idling bylaw
Reduction potential:	5,066 tonnes CO_2
Partners:	Local Government, Senior Government, Businesses and Residents

Description

Vehicle idling not only contributes to GHG emissions, but also wastes money and fuel, pollutes the air and creates a public health risk.

Extensive research by governments and vehicle manufacturers on fuel consumption and idling has exposed a number of myths about idling. Modern engines require only 30 seconds of idling before driving on winter days.[34] Additionally, scientific studies have shown that more than 10 seconds of idling uses more fuel than restarting the engine and unnecessary idling for 10 minutes a day uses about 5 percent more fuel over the year[35]. Furthermore, vehicle idling reduction programs can save businesses up to 20% on annual fuel budgets.[36]

Communities have the power to create regulations to control idling through the Community Charter (and the Motor Vehicle Act).[37] By promoting programs to reduce idling and developing an anti-idling bylaw there is potential to reduce 5,066 tonnes of greenhouse gases. This reduction initiative is as easy as turning a key and recent surveys show a high willingness to participate in this initiative.

Reducing Idling makes good ¢ents!

Gordon Food Service, a company that provides food products, supplies and equipment to restaurants and institutions throughout BC, found that 60% of their fleet vehicles were idling unnecessarily, on average for 10 minutes per day. Further investigation found that many employees believed that turning off the engine put more wear and tear on the vehicle.

After implementing an anti-idling strategy (which included communications, incentives and follow up) and installing on-board computers to monitor deliveries, Gordon Food Service was able to decrease fuel consumption by 9% just by reducing idling!

Source: Greenfleets BC, greenfleetsbc.com/content/view/58/75/

[34] Idle Free BC: www.idlefreebc.ca/

[35] Natural Resources Canada: oee.nrcan.gc.ca/transportation/personal/driving/autosmart-tips.cfm?attr=8

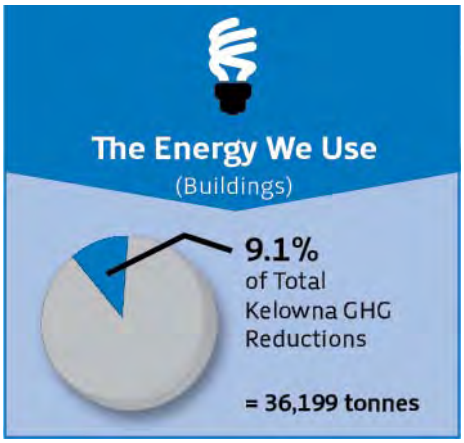
[36] Idle Free BC: www.idlefreebc.ca/

[37] Ministry of Environment, 2007. Inventory of Air Quality Bylaws in British Columbia for: Anti-Idling, Open Burning, and Wood-Burning Appliances.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	16. Develop an Anti-Idling Bylaw	x*							
	17. Investigate land use policies to reduce idling	x*							
2013 Proposed Actions	Implement an Anti-Idling Bylaw	x*							
	Develop an anti-idling education campaign	x*				x			
2014 – 2020 Proposed Actions	Continue anti-idling education	x*				x			
	Enforce anti-idling bylaw	x*							



7. The Energy We Use
Buildings

Actions

- Improve energy efficiency in new buildings
- Utilize bio-methane for residential heating
- Improve energy efficiency in existing buildings
- Install district energy
- Increase building efficiencies through compact development

In 2007, nearly 28% of Kelowna's GHG emissions came from the use of natural gas and electricity in buildings for heating and cooling, lighting, running appliances and heating hot water.

Official Community Plan Policy 7.19.2 Energy Reduction Priorities will help achieve greenhouse gas emission reductions from the building sector by placing a "primary focus on reducing demand, then prioritizing further efforts in the following sequence: re-using waste heat, using renewable heat, and then finally on using renewable energy."

With the expectation of electricity prices continuing to rise (FortisBC electrical prices increased 6.6% in January 2011[38]), it makes sense financially to reduce the energy consumed in buildings either through conservation or improved energy efficiencies in equipment and appliances.

The City can request and support changes to the BC Building Code and the National Energy Code to increase energy efficiency and reduce demand and greenhouse gases in new buildings. In addition, encouraging and supporting existing buildings to conserve and retrofit will also lower emissions. These initiatives will result in savings on monthly energy bills and create more comfortable buildings with better ventilation, temperature and lighting control.

Further, reductions in greenhouse gases will be achieved through the re-use of waste heat in two district energy systems which are already being planned.

The City of Kelowna is also working with FortisBC to develop a facility at the Glenmore Landfill to convert landfill gas and upgrade it to pipeline-grade methane (also known as bio-methane).[39]

Lastly, creating more compact communities, as set out in the Official Community Plan, can also reduce emissions as well as assist with the goal of reducing vehicle kilometers travelled by 20% per capita.

[38] FortisBC, 2011News Release. www.fortisbc.com/MediaCentre/NewsReleases/2010/Pages/FortisBC-Inc-receives-decision-on-2011-rates.aspx

[39] Terasen Gas, April 8, 2010. Conceptual Proposal – Landfill Gas Recovery Project at Glenmore Landfill Gas Production, City of Kelowna.

Reduction Initiative:	IMPROVE ENERGY EFFICIENCY IN NEW BUILDINGS
Target:	Achieve an EnerGuide rating of 80 for 100% of new, detached and single-unit row houses; achieve the energy performance outlined in the Model National Energy Code for 100% of new multi-unit residential, commercial, institutional and industrial buildings.
Reduction potential:	16,846 tonnes
Partners:	Local Government, Senior government, Utilities, Business and Residents

Description

New provincial legislation requiring higher energy performance in new buildings can significantly lower energy consumption, consequently reducing greenhouse gases, while meeting OCP Objective 5.16 "improve the energy efficiency and environmental performance of new buildings."

In addition to reducing greenhouse gases, energy efficient buildings have lower operating costs for energy and water use, higher values, and contribute to improved health and comfort of occupants.[40]

An updated Federal Model National Energy Code was adopted in November 2011. Generally speaking, this code is 26% more energy efficient than the 1997 Model National Energy Code of Canada for Buildings.[41] It is now up to each province to incorporate the National Energy Code into their building codes.

UBCO Fipke Building achieved LEED Gold
Photo courtesy of FortisBC

What is EnerGuide?

The EnerGuide System is a standard measure of a home's energy performance. A rating of 80 or higher indicates the home is highly energy efficient.

Source: Natural Resources Canada, oee.nrcan.gc.ca/residential/personal/16352

The Province of BC is updating the BC Building Code to improve the energy performance of new buildings. By fall 2012, it is anticipated that the Building Code will require energy performance for new housing that, when combined with provisions under the BC Energy Efficiency Act, will be equivalent to EnerGuide 80.[42] Further the Province is participating in a national process to establish an improved energy code for larger, more complex buildings.[43]

In 2011 the City of Kelowna signed on to the "Solar Hot Water Ready Regulation", an optional component of the BC Building Code. Inclusion in this regulation requires all new construction of single family homes will be required to accommodate future installation of a solar hot water system. As solar hot water technology advances, this method of water heating will likely become more cost effective and therefore the installation of these systems will increase.

[40] Province of BC. Green Building. www.housing.gov.bc.ca/building/green/index.htm
[41] Government of Canada. National Building Code, www.nationalcodes.ca/eng/questions.shtml
[42] Province of BC Building and Safety Standards Code Questions, 2011. Pers. Comm..
[43] Province of BC. Green Building. www.housing.gov.bc.ca/building/green/index.htm

The new building reduction initiative is based on objectives originally set out by the Community Action on Energy and Emissions (CAEE) program, an initiative of the Ministry of Energy, Mines and Petroleum Resources[44], but has also been worked on at the national and provincial levels. For new buildings the targets aim to:

- Achieve an EnerGuide rating of 80 for 100% of new, detached, single-unit and row houses
- Achieve the energy performance outlined in the new federal Model National Energy Code[45] for 100% of new multi-unit residential, commercial, institutional and industrial buildings.

Over 90% of Climate Action Workshop participants believe that these targets are achievable, and most (70%) feel the City should take the lead on implementing them. While the legislation to mandate implementation of these targets must come from senior government, there are many things the City can still do to ensure their success and early adoption. These initiatives are outlined in the table below.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	18. Change and implement the BC Building Code to improve energy performance of both small scale housing and larger more complex residential, industrial, commercial and institutional buildings to achieve: • EnerGuide 80 for 100% of new, detached, single-unit and row houses • The energy performance outlined in the Model National Energy code for 100% of new multi-family, commercial, institutional and industrial buildings			x*					
	19. Implement updated BC Building Code	x*							
	20. Educate developers and the public on energy efficiency options including energy efficiency updates to Building Code, EnerGuide, energy efficient options and costs. ONGOING							x*	x
	21. Implement OCP Policy 5.16.3 Variances for "Green" Features. Staff will give favourable regard to variance applications to reduce setbacks whose sole purpose is to accommodate green building features (e.g. solar panels etc.), provided that safety and neighbourhood impact issues can be addressed. ONGOING	x*							
	22. Provide incentives to encourage higher energy efficiencies. ONGOING	x	x	x*				x*	
	23. Support utility companies, when appropriate, to help achieve their energy efficiency goals and targets. ONGOING	x		x*					x
2014 – 2020 Proposed Actions	Encourage heat pump technology over electric baseboards	x						x*	**x**
	Encourage passive solar design once Energy Conservation Development Permit Areas and/or Low Carbon Economic Development Zones are implemented (see "Develop Municipal Programs and Policies to Achieve a Low Carbon Community"	x							

[44] CAEE, www.empr.gov.bc.ca/RET/CommunityEnergySolutions/CAEEI/Pages/default.aspx
[45] www.nationalcodes.ca/mnecb/index_e.shtml

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
	under Planning Your Community)								
	Implement OCP Policy 5.16.2 Eco-Industrial Network. Encourage networks of industrial and support businesses to build efficiencies in energy resource use and waste management	x							
	Implement OCP Policy 5.2.2 Sustainability Incentives for the Urban Core	x							

Reduction Initiative:	UTILIZE BIO-METHANE FOR RESIDENTIAL HEATING
Target:	Develop a facility at the Glenmore Landfill to recover landfill gas and upgrade it to pipeline-grade methane for heating residential homes. The reduction is based on 1600 homes using landfill gas bio-methane by 2020.
Reduction potential:	7,171 tonnes
Partners:	Local Government, Utilities, Residents

Description

When bacteria break down organic waste in a landfill, they produce landfill gas which is comprised of 50-55% methane, 45-50% carbon dioxide as well as moisture and other trace organic compounds. Methane is 21 times more potent as a greenhouse gas than carbon dioxide. Currently, the Glenmore Landfill operations convert 12 – 15% of the landfill gas captured to electricity and destroy the remainder by flaring (thus reducing the tonnes of greenhouse gases emitted).

The City of Kelowna is working with FortisBC to build a facility at the Glenmore Landfill to convert landfill gas to pipeline-grade methane (also known as bio-methane) therefore maximizing landfill gas utilization.[46] Endorsed by Council, the project is now awaiting approval by the BC Utilities Commission. Considered carbon neutral as it is produced from organic waste, this "renewable natural gas" can be offered to FortisBC customers and displace the use of conventional natural gas.[47] In addition, the project has the opportunity to generate revenue for the City with the sale of landfill gas, pending regulatory and final Council approvals.

Laying pipe to collect landfill gas at Glenmore Landfill

Based on 2010 collection rates of landfill gas, initially enough energy could be delivered to 660 homes. This would reduce 3150 tonnes of CO_2 annually by displacing the use of traditional natural gas. It is anticipated that the operation could be expanded to provide enough landfill gas for 2500 homes by 2025. The reduction estimate is based on 1600 homes using landfill gas bio-methane by 2020 to reduce greenhouse gas by 7,171 tonnes. It should be noted that additional greenhouse gas reductions are achieved through the destruction of methane, but these are accounted for in the "*Implement Regional Solid Waste Management Plan*" section.

[46] Terasen Gas, April 8, 2010. Conceptual Proposal – Landfill Gas Recovery Project at Glenmore Landfill Gas Production, City of Kelowna.
[47] FortisBC. Environmental Benefits of Renewable Natural Gas.
www.fortisbc.com/NaturalGas/Homes/Offers/RenewableNaturalGas/Pages/Environmental-benefits.aspx

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	26. Execute agreement(s) to develop landfill gas to pipeline grade bio-methane production facility to support OCP Policy 7.25.1 Resource Recovery.	x*							
2013 Proposed Actions	Once approved, construct production facility in support of OCP Policy 7.19.3.	x						x*	
2014 – 2020 Proposed Actions	Consider use of renewable natural gas at City facilities as per OCP Policy 7.19.3.	x*							

Reduction Initiative:	IMPROVE ENERGY EFFICIENCY IN EXISTING BUILDINGS
Target:	Reduce natural gas and electrical energy consumption in existing buildings by 3% below 2007 levels.
Reduction potential:	6,635 tonnes
Partners:	Local Government, Senior government, Utilities, Business and Residents

Description

There are many opportunities to improve the energy efficiency in existing buildings, thereby reducing greenhouse gases as well as lowering operating costs. Retrofitting with a high efficiency furnace or boilers and changing habits (e.g. turning off lights) can reduce energy consumption and save money on energy bills.

When asked why the public have not completed energy upgrades, the 2011 Climate Action Barriers Study showed:

- 32% of residents have not completed upgrades due to costs;
- 17% of residents felt that it is not necessary or would make too little difference; and
- 15% of residents felt that they had already completed enough upgrades.[48]

Informing the public on behavioral and retrofit options to lower energy consumption would be beneficial to achieve a higher uptake in existing buildings.

Amendments to the provincial Clean Energy Act require that BC utility companies "must establish and maintain a program to offer financing to eligible persons for improving the energy efficiency of a building or part of a building"[49] to provide loans for energy upgrades. By providing these loans, utilities can help overcome financial barriers. Grants and rebates through the Provincial LiveSmartBC program, utility companies and Canadian Mortgage and Housing Corporation are also available to help reduce the energy upgrade costs.

Reducing natural gas and electrical energy consumption in existing buildings by 3 percent below 2007 levels by 2020 will decrease greenhouse gases by 6,635 tonnes and assists in meeting OCP Policy 7.19.2, Energy Reduction Priorities. It should be noted that greater reductions in greenhouse gases can be achieved employing stricter energy efficiencies in new development than through retrofitting existing buildings. This is primarily due to the fact that if adopted, all new buildings would have to adhere to the higher energy standards, while the existing retrofit uptake will be lower. Discussions with stakeholder FortisBC, shows that this target is achievable and

Energy Efficient Upgrades Can Make a Big Difference!

Including energy efficient upgrades as part of renovations can make a huge difference to monthly energy bills, as one Kelowna resident recently discovered.

While their early 1990s home was built to code at the time, insulation has improved significantly over the past 2 decades. An energy audit showed owner Wayne Carey that the crawl space was sucking heat out of his home!

After spending a couple hours re-insulating the crawl space, and installing a new 95% efficient furnace (another audit recommendation), Carey has seen his natural gas heating bill drop by nearly 60 percent! The total cost for his insulation and new furnace was $5,000 (he installed the insulation himself) which equals a three year payback.

Carey's also noticed improved comfort throughout his home. And because he went through LiveSmart BC, Carey received almost $2,500 in rebates.

Source: FortisBC

[48] Corporate Research Associates, 2011. Climate Action Barriers Study prepared for the City of Kelowna
[49] Province of BC, 2011. BILL 7 — 2011 MISCELLANEOUS STATUTES AMENDMENT ACT, 2011

in-line with other FortisBC initiatives.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	27. Offer incentives including a financing program to encourage energy efficient retrofits and upgrades. ONGOING		x*	x*				x*	
	28. Inform and encourage homeowners and businesses to implement energy efficient upgrades for existing residential, commercial and industrial buildings. ONGOING	x	x*	x*				x*	x
	29. Train Development Services staff on available rebates and incentives in order for staff to provide information on available programs to those applying for permits.	x						x*	
	30. Support utilities, when appropriate, to help achieve their energy efficient goals and targets. ONGOING	x	x	x*					**x**
2014 - 2020 Proposed Actions	Partner with utility companies to implement a community-based social marketing program to encourage energy efficient upgrades	x	x	x				x	
	Investigate the potential of implementing EnerGuide ratings into MLS listings		x*						

Reduction Initiative:	**INSTALL DISTRICT ENERGY**
Target:	Implement district energy for City Centre and South Pandosy.
Reduction potential:	4,535 tonnes
Partners:	Local Government, Senior government, and Utilities

Description

District energy is the name given to a system that efficiently distributes heat and/or cooling generated in a centralized location to more than one building. In general, a district energy system produces steam, hot water or chilled water at a central plant and pipes this energy into the community providing: space heating; domestic hot water heating; and/or air conditioning.[50]

District energy systems have many benefits including:

- Reducing GHG emissions
- Making long term energy costs more predictable
- Freeing up building space (since boilers and chillers in individual buildings are not required)
- Reducing noise levels[51]

Due to costs of infrastructure for these systems at this time, district energy is primarily aimed at new commercial, institutional and multi-unit-residential buildings.

Of five areas identified[52], South Pandosy and Downtown (City Centre) were determined to be the areas with the strongest potential for district energy systems. The City of Kelowna is moving forward on both these energy systems and in 2010 entered into a Memorandum of Understanding with FortisBC to explore the feasibility of developing these two unique renewable energy systems. The systems will use waste heat and water from the City's Wastewater Treatment Facility and from industrial facilities, providing energy to heat or cool a number of Kelowna's buildings.

District Energy in Kelowna

The idea of district energy systems is not new. In fact, the first Canadian system was built in London, Ontario in 1880!

District energy is not even new to Kelowna. In fact, the reliability of heat recapture from the City of Kelowna's Wastewater Treatment Facility is demonstrated in the district energy system used to heat several buildings at Okanagan College. Over 800 tonnes of GHG emissions have been saved each year since 2004!

Additionally, UBCO uses a geothermal district energy system to heat and cool all new academic buildings.

Source: Community Energy Association, 2010. Kelowna District Energy Pre-Feasibility Study

By 2020, it is anticipated that the systems could reduce greenhouse gases by 4,535 tonnes as follows:

- Downtown/City Centre: 2,975 tonnes/year (first to implement)
- South Pandosy: 1,560 tonnes/year

It is anticipated once full build out is complete (anticipated by 2036), the two systems could reduce community greenhouse gases by 16,300 tonnes per year.

Initial consultation on district energy projects in Kelowna was completed as part of the Pre-Feasibility Study. Further consultation is taking place during a Feasibility Study and through development of district energy policies in conjunction with the Community Energy Association.

[50] FortisBC, *How District Energy Works*, fortisbc.com/EnergySolutions/DistrictEnergySystems/Pages/How-district-energy-works.aspx
[51] FortisBC, *Benefits of District Energy*, fortisbc.com/EnergySolutions/DistrictEnergySystems/Pages/Benefits-of-district-energy.aspx
[52] Community Energy Association, 2010. *Kelowna District Energy Pre-Feasibility Study*. www.kelowna.ca/CityPage/Docs/PDFs//Environment%20Division/CEA%20Kelowna%20District%20Energy%20Report.pdf

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	24. Work towards proposed agreement for development of Downtown district energy system to support OCP Policies 7.19.2 and 7.19.3	x*						x*	
	25. Work with the Community Energy Association (CEA) to develop policy(ies) to ensure that all new commercial, institutional and multi-unit residential buildings are district energy ready as per OCP Policy 7.19.1.	x*							**x**
2013 Proposed Actions	Begin construction of Downtown District Energy System to support OCP Policies 7.19.2 and 7.19.3	x						x*	
2014 – 2020 Proposed Actions	Finish construction of Downtown District Energy System	x						x*	
	Continue to work towards developing the Pandosy district energy system to support OCP Policies 7.19.2 and 7.19.3	x*						x*	
	Investigate other district energy opportunities as identified in the Pre-feasibility study, which could provide an additional reduction of 7,850 tonnes, although it is unlikely that these projects will come to fruition before 2020 to support OCP Policy 7.19.2.	x*						x	

Reduction Initiative:	INCREASE BUILDING EFFICIENCIES THROUGH COMPACT DEVELOPMENT
Target:	Achieve an annual incremental increase in compact development such that the proposed densification targets for new residential buildings will be consistent with the 2030 Official Community Plan.
Reduction potential:	1,012 tonnes
Partners:	Local Government, Business and Residents

Description

One of the main goals of the 2030 OCP is to focus growth in compact, connected and mixed-use (residential and commercial) urban and village centers. To meet this goal while accommodating the need for over 20,000 new units by 2030, approximately 57% of all new housing needs to be in the form of apartments and townhouses.[53]

Mixed use development on Pandosy

Housing type is closely related to the amount of home energy consumption. In fact, research has shown that an average multi-family unit uses approximately half the energy (and consequently emit less greenhouse gas) of a single detached home depending on the size of the dwelling, the type of structure and location. As previously discussed, most home energy use is for space heating. Compact multi-family buildings (such as apartments, town houses and row houses) share walls and are generally smaller, so therefore require less heating and cooling.[54]

Compact, mixed-use development also helps ease reliance on motor vehicles as these types of development can better support alternative transportation options. The greenhouse gas savings by switching to alternative transportation are accounted for in the "Reduce Vehicle Kilometers Travelled by 20%" Transportation section.

A reduction of 1,012 tones of greenhouse gases can be achieved through an annual incremental increase in compact development such that the proposed densification targets for new residential buildings will be consistent with the 2030 Official Community Plan.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	31. Encourage compact neighbourhoods that place priority on infill, redevelopment and densification strategies to meet the target urban core concentration as identified in the 2030 OCP. ONGOING	x*						x*	

[53] Kelowna 2030 Official Community Plan

[54] Jonathan Rose Companies, 2011. *Location, Efficiency and Housing Type: Boiling It Down to BTUs* prepared for the EPA, page 4 http://www.epa.gov/smartgrowth/pdf/location_efficiency_BTU.pdf

8. Planning Our Community

Actions

- Maintain and improve urban forest
- Achieve municipal carbon neutral governance
- Develop municipal policies and programs to achieve a low carbon community

Urban planning plays a vital role in creating a resilient low carbon community. In fact, the Province estimates that local governments have control or influence over approximately 45% of all greenhouse gas emissions.[55]

Land use and transportation network decisions are directly related to emissions growth.[56] Settlement patterns can influence the amount people drive and the amount of energy used. Once constructed, it is prohibitively expensive to redesign a City's structure. By encouraging mixed use, higher density, and pedestrian friendly communities, opportunities are created for active transportation and alternative energy use (such as district energy). Additionally, these actions foster a healthier community by providing a variety of lifestyle, housing, economic and cultural opportunities.[57]

Planning helps ensure that Kelowna's urban forests thrive, providing a vital storage area for carbon and perhaps more importantly this 'natural green infrastructure' provides a host of social, health, economic and environmental benefits.

Corporately, reducing energy and emissions not only provides long term economic and environmental benefits, but also showcases the City as a leader.

While planning initiatives may not always have immediate measurable effects, they are crucial to ensuring success of other reduction initiatives such as "reduce vehicle kilometers travelled by 20% per capita" or "increase building efficiencies through compact development."

[55] Ministry of Environment. Community Energy and Emissions Inventory. www.env.gov.bc.ca/cas/mitigation/ceei/index.html
[56] BC Climate Action Toolkit. Actions for Landuse. toolkit.bc.ca/solution/land-use-solutions
[57] BC Climate Action Toolkit. Actions for Landuse. toolkit.bc.ca/solution/land-use-solutions

Reduction Initiative:	**MAINTAIN AND IMPROVE URBAN FOREST**
Target:	Maintain existing urban forest; and City Parks to plant 25,600 trees by 2020 (a combination of seedlings and 2-3" caliper trees).
Reduction potential:	23,694 tonnes CO_2
Partners:	Local Government, Senior Government, Businesses, Residents

Description

Trees remove carbon dioxide from the atmosphere through photosynthesis. The carbon is then stored in the tree and the oxygen is returned back to the atmosphere[58] (known as carbon sequestration). Tree Canada estimates that the average Canadian urban tree sequesters 2.5 kg of carbon each year (9.2 kg of carbon dioxide (CO_2) removed).[59] By maintaining a healthy urban forest and continually planting new trees, communities can reduce their emissions.

The benefits of trees go far beyond carbon storage. Trees can:

- Reduce local temperatures (and reduce air conditioning costs)
- Improve air quality
- Reduce storm water runoff
- Create an attractive environment
- Increase property values
- Improve mental and physical health[60]
- Increase biodiversity

Planting trees is only one of the solutions!

Planting new trees is only one solution to reducing Kelowna's greenhouse gas emissions. While trees provide so many benefits, Kelowna would need nearly 43.5 million trees in our urban forest by 2020 to remove enough CO_2 to meet our 33% reduction goal. Compare that to the 3.3 million trees that Kelowna currently has!

Kelowna recently developed an Urban Forestry Strategy to guide the management of urban and parkland trees. In addition to encouraging residents to grow and preserve Kelowna's urban forest, the City offers the Neighbourwoods Program. Over the past two years nearly 1,400 trees were planted on private property through this program.

In 2007, Kelowna's tree cover was about 13%. The cover is comprised of an estimated 3.3 million trees that sequester 7,500 tonnes of carbon annually (equivalent to removing 27,500 tonnes of carbon dioxide). Approximately 606,000 of these trees are ponderosa pine, of which according to the Province; Kelowna could lose about 80% due to pine beetle.[61] Taking this into account, our tree cover could be reduced to 2.8 million trees by 2020 if no replanting efforts are undertaken.

The following reductions can be achieved by maintaining and improving our urban forest:

Initiative	Reduction
2020 Urban Forest Sequestration (taking into account loss of trees due to pine beetle)	23,459 tonnes
City Parks to plant a total of 25,600 trees by 2020 (two hundred 2-3 caliper trees and 3000 native seedlings annually). Note this does not include trees planted by the public as there is no estimate available.	235 tonnes
Total Reduction	23,694 tonnes

Trees ready for pick up as part of the City's Neighbourwoods program

[58] ICLEI. Climate and Air Pollution Planning Assistant
[59] Tree Canada. What Trees Can Do to Reduce Atmospheric CO_2
[60] Landscape Ontario. Green for Life. www.landscapeontario.com/attach/1236790554.Benefits_of_Plants.pdf
[61] City of Kelowna, 2007. Kelowna's Urban Forest: Urban Forest Effects (UFORE) Analysis

Actions and Responsibilities

The actions and responsibilities outlined below will help achieve OCP Policy 6.3.1 to increase tree canopy coverage to 20% through preservation and planting strategies.

* denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	32. Develop an implementation team to prioritize the Urban Forestry Strategy recommendations including priorities, timelines, funding and staffing implications and strategy.	x*							
	33. Plan for tree succession. ONGOING	x*							
	34. Encourage homeowners to plant trees through programs such as Neighbourwoods. ONGOING	x*							x
	35. Plant 200 2-3"caliper trees and 3000 native seedlings annually. ONGOING	x*							x
2013 Proposed Actions	Implement Urban Forestry Strategy	x*							
2014 – 2020 Proposed Actions	Continue to Implement Urban Forestry Strategy	x*							
	Incorporate the Urban Forestry Strategy into the Air Quality Management Plan	x*							

Reduction Initiative:	**ACHIEVE MUNICIPAL CARBON NEUTRAL GOVERNANCE**
Target:	Implement Corporate Energy and GHG Emissions Plan and investigate offsets to become carbon neutral.
Reduction potential:	7,756 tonnes
Partners:	Local Government, Senior Government

Description

The City of Kelowna is one of 180 out of 188 local governments who have signed the Provincial Climate Action Charter. By signing the charter, the City has voluntarily committed to being carbon neutral in respect of its operations by 2012.[62] Carbon neutrality means reducing emissions from corporate operations and mitigating the remaining emissions through qualified carbon offsets (a credit for greenhouse gas reductions achieved by one party that can be purchased and used to compensate the emissions of another party[63]).

The Province recognizes that local governments vary in their capacity and resources to become carbon neutral by 2012 and those municipalities want to keep offset dollars in their communities. With this in mind, the Province approved the 'making progress towards' approach for the short-term for those Climate Action Charter signatories who are only able to achieve some of the steps to carbon neutrality (e.g. they measure, reduce and report on corporate emissions). These steps demonstrate progress towards the achievement of carbon neutrality. The City of Kelowna has taken the "making progress towards" approach to meeting the requirements of the Climate Action Charter and has established a Carbon Energy Reserve that will be used exclusively for projects that will reduce corporate energy and GHG emissions.

Building more energy efficient buildings!

When the new H2O Adventure and Fitness center was constructed, Council decided to invest in energy efficiency upgrades resulting in the facility operating at 40 percent of the energy required by a conventional pool.

Heat recovery from moist air, windows to let in natural light and keep out excess heat, special tinting to reduce glare, and solar lit entrances are all part of the upgrades to save over 850 tonnes of GHG emissions compared to the original design. The innovative facility has won numerous awards for its energy efficiency and sustainable choices.

The City of Kelowna recently completed a *Corporate Energy and GHG Emissions Plan*, which provided an inventory of greenhouse gas emissions for all City operations (8,317 tonnes in 2007), forecasted emissions for 2017 (10,118 tonnes), as well as highlighted potential corporate reduction initiatives. If all reduction initiatives were implemented it is estimated that the City of Kelowna can reduce GHG emissions 22% below its 2007 levels by 2017.[64] Total cost to implement the recommendations is estimated at over $4.5 million. The work, however, will result in annual energy savings of nearly $850,000[65], a payback in 5.3 years.

Implementing the *Corporate Energy and GHG Emissions Plan*, received by Council in December 2010, as well as purchasing carbon offsets, can achieve a reduction of 7,756 tonnes by 2017.[66]

[62] Province of BC. Climate Action Charter. www.cscd.gov.bc.ca/ministry/whatsnew/climate_action_charter.htm
[63] David Suzuki Foundation. Carbon Offsets. www.davidsuzuki.org/issues/climate-change/science/climate-change-basics/carbon-offsets/
[64] Hyla Environmental, 2011. City of Kelowna Corporate Energy and GHG Emissions Plan, page xiv
[65] Hyla Environmental, 2011. City of Kelowna Corporate Energy and GHG Emissions Plan, page 72
[66] Hyla Environmental, 2011. City of Kelowna Corporate Energy and GHG Emissions Plan, page 71 Inventory Used for CAC Accounting.

Actions and Responsibilities

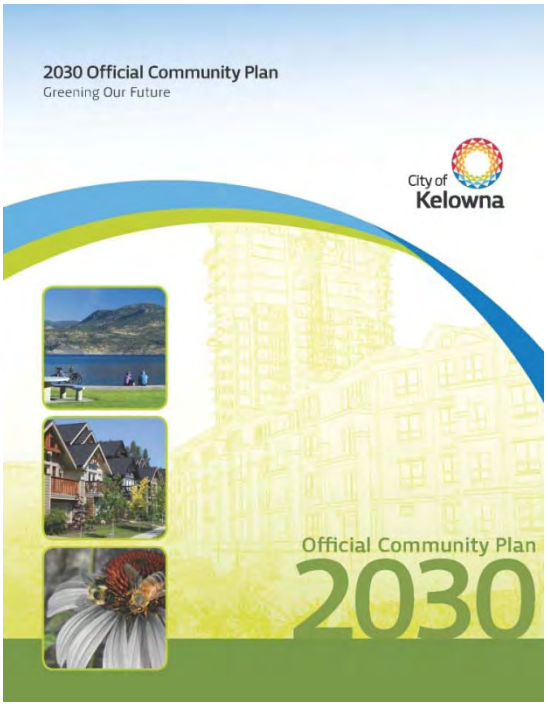
* denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	36. Continue to apply for the Provincial Climate Action Revenue Incentive Program grant. ONGOING	x*							
	37. Allocate Carbon/Energy Reserve Funds to projects that will help achieve Corporate GHG goal of 22% below 2007 by 2017. ONGOING	x*							
	38. Continue implementing reduction initiatives outlined in *Corporate Energy & GHG Emissions Plan*, 2011 as per OCP Policies 7.1.2, 7.1.3 and 7.2.2. ONGOING	x*							
2014 – 2020 Proposed Actions	Investigate carbon offsets for emissions that cannot be reduced	x*							

Reduction Initiative:	**DEVELOP MUNICIPAL POLICIES AND PROGRAMS TO ACHIEVE A LOW CARBON COMMUNITY**
Target:	Implement policies outlined in the Kelowna 2030 Official Community Plan that are consistent with reducing greenhouse gas emissions and investigate the implementation of a development permit area for energy conservation.
Reduction potential:	N/A
Partners:	Local Government

Description

The newly adopted 2030 Official Community Plan recognizes the important link between land use planning and greenhouse gases. Policies in the OCP aim to create a long-term, sustainable community by encouraging efficient land use, and providing infrastructure and facilities that will support walking, cycling and transit in a more compact and connected community. Some of the OCP goals (and supporting policies) that will be instrumental in achieving a 33% reduction in greenhouse gases include:



- **Contain Urban Growth**. Reduce greenfield urban sprawl and focus growth in compact, connected and mixed-use (residential and commercial) urban and village centres.
- **Feature a Balanced Transportation Network**. Increase the attractiveness, convenience and safety of all modes of transportation by implementing "complete streets" that are designed to serve a broader range of transportation modes, focusing on pedestrians, cyclists and transit service, and that function in the context of surrounding land uses.
- **Improve Energy Efficiency and Performance of Buildings.** Improve the energy efficiency and environmental performance of buildings and infrastructure.[67]

Encouraging complete communities (OCP Policy 5.2.4), maximizing pedestrian and cycling connectivity (OCP Policy 5.10.1) and implementing a variety of development tools such as evaluation checklists (OCP Policy 5.40.1) and sustainability incentives (OCP Policy 5.2.3) will increase energy efficiency and consequently reduce greenhouse gases.

In 2008, the Province amended the Local Government Act allowing for Development Permit Areas (DPA) that promote energy and water conservation, and reduce greenhouse gases. Implementing this type of a DPA may also assist with achieving some of the goals outlined in the OCP.[68]

The above is essential to support the reductions put forth in the Transportation and Energy sections.

[67] City of Kelowna, Kelowna 2030 Official Community Plan. www.kelowna.ca/CM/Page357.aspx
[68] Province of BC Local Government Department. Official Community Plans. www.cscd.gov.bc.ca/lgd/planning/official_community_plans.htm

Actions and Responsibilities

* denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	39. Implement OCP 2030 Policies. ONGOING	x*							
	40. Investigate a Low Carbon Economic Development Zone and/or Energy Conservation Development Permit Area guidelines.	x*							
2013 Proposed Actions	Continue Action 40 and implement if feasible								

9. The Waste We Create

Actions

- Achieve Regional Solid Waste Management Plan Targets

On average, every day in Kelowna, some 300 tonnes of garbage arrive at the Glenmore Landfill, creating greenhouse gases, such as methane and carbon dioxide, as it decomposes.[69] While owned and operated by the City of Kelowna, the Glenmore Landfill serves as the solid waste disposal facility for the entire Central Okanagan Regional District. In 2007, it was estimated that emissions from waste disposal (generated by Kelowna only) accounted for 54,265 tonnes (7%) of our community greenhouse gases. While the emissions generated in this sector are much lower than those from the transportation and energy sectors, there is an opportunity to make significant reductions. In addition to lowering greenhouse gas emissions, reducing waste conserves natural resources, energy and space in the region's only active landfill, protects the environment and saves future tax dollars.[70]

While the Central Okanagan has made great strides in reducing its waste, there is still a lot of opportunity to reduce, reuse and recycle. In fact, a 2010 comprehensive waste composition study showed that 50% of garbage originating from local businesses, institutions and multi-family developments could have been diverted into an existing recycling program.[71]

In addition to reducing the volume of waste received at the landfill, Kelowna is already reducing greenhouse gases by capturing the methane produced as the garbage decomposes. Currently, landfill gas is flared and used as an energy source reducing the methane that enters the atmosphere (which is 21 times more potent a greenhouse gas than carbon dioxide). Collecting and burning landfill gas also prevents foul odors and potential explosions and fires.[72] Kelowna is also working with FortisBC to upgrade the methane for residential heating (see "Utilize Bio-methane for Residential Heating" in the Energy section for additional details).

Introduction of automated curbside pickup has given residents more opportunities to recycle and compost their yard waste.

Photo courtesy of Regional Waste Reduction Office

While larger reductions can be made in the transportation sector, waste reduction is an easier sell from a public perception point of view. Nearly 63% of Kelowna residents consider recycling and/or improving waste management to be the most important things they can do to protect Kelowna's natural environment[73] and therefore it might be easier to implement waste reduction changes.

[69] City of Kelowna, Glenmore Landfill Gas Management, www.kelowna.ca/CM/Page1761.aspx
[70] RDCO, Waste Reduction, www.regionaldistrict.com/departments/waste/default.aspx
[71] RDCO, Waste Reduction, www.regionaldistrict.com/departments/waste/waste_garb_commercial.aspx
[72] City of Kelowna, Glenmore Landfill Gas Management, www.kelowna.ca/CM/Page1761.aspx
[73] City of Kelowna Climate Action Barriers Study, 2011

Reduction Initiative:	**ACHIEVE REGIONAL SOLID WASTE MANAGEMENT PLAN TARGETS**
Target:	Design and implement programs within the framework of the Central Okanagan Solid Waste Management Plan with the goal of exceeding diversion targets of 58% to 66% by 2023; and capture 50% of landfill gas with 70% efficiency.
Reduction potential:	49,022 tonnes
Partners:	Local Government, Senior Government, Business, and Residents

Description

The Regional District of the Central Okanagan, together with its member municipalities, including the City of Kelowna, received provincial approval for its *Regional Solid Waste Management Plan* in 2008. The plan underwent extensive public consultation and establishes a waste management framework to meet the Regional District's needs for the next 20 years and guides the activities in the RDCO towards a zero waste goal.[74]

In order for the plan to be successful, residents and businesses will have to continue to find new ways to reduce, reuse, recycle and rethink (ideas about what is purchased and how garbage could be used as a resource instead of waste).

A reduction of over 49,000 tonnes can be achieved in the solid waste sector by:

- Designing and implementing programs within the framework of the Central Okanagan Solid Waste Management Plan with the goal of exceeding diversion targets of 58% to 66% by 2023 (depending on future utilization of a bioreactor and/or organics composting) ; and
- Capturing 50% of landfill gas with ability to utilize 70% of what is captured.

Making Strides

In the past five years, the Central Okanagan has made great strides in reducing garbage sent to the Glenmore landfill.

With new programs, such as the residential automated collection system, the public has reduced waste landfilled from 145,846 metric tonnes in 2007, to 114,103 metric tonnes in 2011, nearly a 22% reduction in waste!

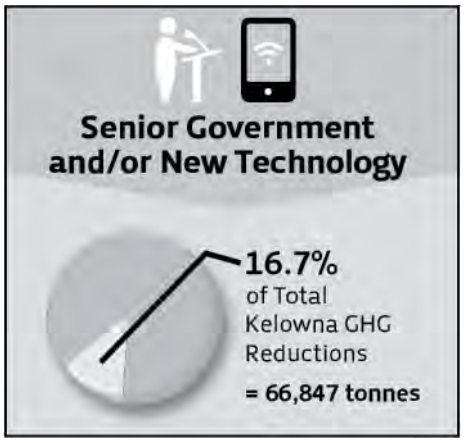
Source: Peter Rotheisler, Regional Waste Reduction Office, pers. comm.

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2012 Actions	41. Continue to implement the Solid Waste Management Plan as per OCP Policy 7.24.1 and 7.25.2. ONGOING	x							x*
	42. Continue to expand collection of landfill gas as per OCP Policy 7.25.1. ONGOING	x*							

[74] Regional District of Central Okanagan. Regional Solid Waste Management Plan, 2006. www.regionaldistrict.com/docs/waste/WastePlan/RevisedSWMP.pdf



10. Senior Government and new Technology

Actions

- Senior government to implement further policies and programs to further reduce greenhouse gas emissions. New technology to continue to increase efficiencies to reduce energy consumption in all sectors (gas, electricity and natural gas).

Implementing all of the actions in this Plan will get Kelowna 83% of the way to reaching the 33% reduction target. This is not unlike the Provincial Climate Action Plan, which only identifies actions to achieve 73% of its own 33% reduction target.[75]

To succeed, new and innovative programs, policies and/or legislation must be implemented by senior government that will significantly reduce greenhouse gases.

Further, there may be opportunities to gain energy efficiencies and reduce emissions as technology continues to evolve and change.

[75] Province of BC, 2008. Climate Action Plan. www.livesmartbc.ca/attachments/climateaction_plan_web.pdf

Reduction Initiative:	IMPLEMENT FURTHER SENIOR GOVERNMENT POLICIES AND/OR PROGRAMS AND NEW TECHNOLOGY
Target:	Senior government to implement additional policies and programs not mentioned in this plan to further reduce greenhouse gas emissions. New technology to continue to increase efficiencies to reduce energy consumption in all sectors (gas, electricity and natural gas).
Reduction potential:	66,847 tonnes
Partners:	Senior Government and Private Enterprise

Description

In order to achieve our 33% reduction goal, Kelowna will rely on senior government and/or new technology to come up with programs, policies, legislation or new products to reduce an additional 66,847 tonnes in Kelowna greenhouse gas emissions.

From implementing stricter tailpipe emission standards to developing incentives to retrofit homes, both the federal and provincial government have developed numerous programs, policies and legislation to reduce greenhouse gas emissions. Senior government must continue to expand and implement new programs and legislation to achieve further reductions. Canada has over double the emissions per capita of many European countries[76] and senior government could investigate their achievements to see what can be adapted and implemented federally and provincially. As transportation contributes the largest source of emissions, senior governments can strongly influence the amount of kilometers driven by creating barriers for single occupant vehicles and providing opportunities for alternative forms of transportation. The City will need to maintain a dialogue with senior governments through staff correspondence and Union of British Columbia Municipalities (UBCM) and Federation of Canadian Municipalities (FCM).

As private enterprise continues to create new and improved technology, products should continue to reduce energy consumption. For example, energy efficient lighting has improved significantly over the past decade such that now a new LED (light emitting diode) light can use one-tenth the energy[77] of its incandescent counterpart. Further advances in transportation, building and waste technology could see reductions in all those sectors. Private enterprise will be a large component of creating new innovative technology.

[76] The Guardian, www.guardian.co.uk/news/datablog/2011/jan/31/world-carbon-dioxide-emissions-country-data-co2#data

[77] www.designrecycleinc.com/led%20comp%20chart.html

Actions and Responsibilities

Notes: * denotes lead department/organization

	Action	City	Federal Government	Provincial government	BC Transit	Interior Health Authority	School District #23	Utilities	Other
2014 – 2020 Proposed Actions	Investigate and implement new and innovative programs, policies and/or legislation to further reduce greenhouse gas emissions		x*	x*					
	Develop new technologies and products that increase efficient use of energy								x*

11. Community Action

While the City, federal and provincial government and utility companies can provide new programs, opportunities, infrastructure and incentives to help reach the 33% reduction target, the role of the community is crucial in making the target a reality. The key to success will be a public shift in behaviors embracing the new opportunities that will be offered over the next decade. From choosing active transportation to selecting efficient consumer choices to exerting effort to reducing home energy use, the public's involvement will not only reduce greenhouse gases but also improve community health and resilience.

The following section provides ideas and options the public can adopt to help ensure success.

11.1 The Way We Get Around (Transportation)

Even if the City and senior government implement all the recommended actions, a community shift in behavior will be required to reduce transportation emissions. Changing behavior has benefits far beyond greenhouse gas reductions including decreased congestion, decreased accidents, increased health, increased community networks and increased community resilience.

Transportation is the average household's second largest expense. Owning and operating a vehicle is costly. For instance, the average minivan costs $11,591 per year for annual operating and ownership costs[78] compared to an annual transit pass that costs $720.

In addition, numerous health benefits can be experienced with active transportation. Bicycle and walking levels fell 66% between 1960 and 2009, while obesity levels increased by 156%. The numbers are even worse for children for roughly the same time frame. The number of children walking and cycling to school fell 75%, while the percentage of obese children increased by 276%.[79]

Reduce vehicle kilometers travelled:

- At home
  - Choose to cycle, walk, take transit or carpool at least one day per week. Given that over half of Kelowna residents live less than 5 kilometres from work[80] and that cycling is usually the fastest way to travel for trips up to five kilometers[81] a large opportunity exists for people to reduce their greenhouse gas emissions with minimal disruption to their daily schedule.
  - When choosing a home, consider a location that allows for active transportation or is on a prominent bus route
- At work
  - allow employees to work from home one day/week through telecommuting
  - charge employees for parking and use subsidies for employees who use TDM alternatives
  - implement trip planning for business commitments (ex: green routing modeled by Sysco Kelowna)

Local Business Helping Staff Change Commuting Habits

Urban Systems, a local consulting firm, has taken a leadership role through several initiatives that show their commitment to sustainability. For example, Urban Systems subsidizes transit passes for employees to encourage transit use for commuting. Additionally, the office is equipped with amenities and facilities (such as bike racks and showers) to encourage active transportation such as cycling and walking.

Source: Urban Systems Sustainability Charter, 2011

[78] Canadian Automobile Association, 2011. Driving Costs. http://www.caa.ca/documents/CAA_Driving_Costs_Brochure_2010.pdf
[79] Bicycling and Walking in the United States: 2012 Benchmarking Report, Alliance for Biking and Walking. www.8-80cities.org/Articles/05WalkBike_USA_Benchmarking_2012.pdf
[80] Community Energy and Emissions Inventory: www.env.gov.bc.ca/cas/mitigation/ceei/RegionalDistricts/Central_Okanagan/ceei_2007_kelowna_city.pdf
[81] I-go.ca: www.kelowna.ca/CM/Page1057.aspx

Improve vehicle fuel efficiency:

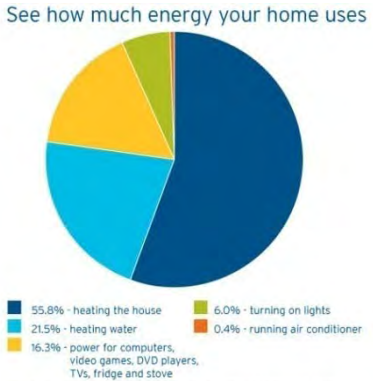
- Determine the most efficient vehicle that can be used for day to day needs. Even if reducing the size of a vehicle is not possible, there is often room for improvement in efficiency even within the same class. For example, the same Chevrolet Silverado 4WD referenced above, is also available in a hybrid version, and could reduce emissions annually by 2.2 tonnes.[82]
- Change driving habits to improve fuel efficiency. Natural Resources Canada Auto$mart provides fuel efficient driving tips including:
    - Decrease driving speed. Reducing speed from 120 km/h to 100 km/h uses 20 percent less fuel.
    - Don't drive aggressively. Speeding, quick acceleration and hard stops can increase fuel consumption by 25%.
    - Use air conditioning sparingly. Air conditioning can increase fuel consumption by 20%.
    - Carry only what is needed. Added weight from heavy items, or roof racks or decreasing vehicle's aerodynamics with roof or bike racks can increase fuel consumption.[83]
- Improve vehicle maintenance. Keeping a vehicle in top operating condition will save fuel and money, reduce long-term maintenance costs and minimize harmful exhaust emissions,[84] suggestions by Natural Resource Canada include:
    - Measure tire pressure once per month. One tire, under-inflated by 8 psi, can increase fuel consumption by 4%.
    - Follow manufacturer's recommended service and maintenance schedule. A poorly maintained vehicle can boost fuel consumption by up to 15 percent. Follow service recommendations for air filter, spark plugs, engine oil and other fluids accordingly to ensure optimum performance and fuel efficiency.

Reduce idling:

- Over 22% of those surveyed at Car Free Day thought idling was beneficial for their vehicle or thought it did not produce pollution. Another 10% idled to keep the driver warm in winter or cool in summer.[85] Even higher percentages (29% thought was beneficial or did not pollute, 23% did it for driver comfort) were noted from the over 600 students surveyed as part of the Mayor's Youth Forum on Climate Change.[86] Targeting education to increase understanding of idling will make it easier for the public to "just turn the key."

[82] Natural Resource Canada. Fuel Consumption Ratings. oee.nrcan.gc.ca/transportation/tools/fuelratings/ratings-search.cfm?attr=8
[83] Natural Resources Canada. Auto$mart Thinking – Fuel Efficient DrivingTips. oee.nrcan.gc.ca/transportation/personal/driving/autosmart-tips.cfm?attr=8
[84] Natural Resources Canada. Quick Tips on Auto$smart Vehicle Maintenance. oee.nrcan.gc.ca/transportation/personal/maintaining/vehicle-maintenance.cfm?attr=8
[85] Car Free Day Survey, 2010
[86] Marathon Communications Inc., 2010. City of Kelowna's 10th Mayor's Youth Forum. www.kelowna.ca/CityPage/Docs/PDFs/%5CCommunity%20Info%5CYouth%20Forum/2010-11-16_YouthForum_Report.pdf

11.2 The Energy We Use (Buildings)



Source: FortisBC fortisbc.com/NaturalGas/Homes/SavingEnergy/HomeEnergySavingsTips/Pages/default.aspx)

Many options exist to improve energy efficiency in both new and existing buildings, while saving on energy bills.

Improve energy efficiency in new buildings:

- Carefully design a home to be energy efficient as well as choose more efficient heating systems and appliances. FortisBC is encouraging these improvements by currently offering rebates for homes that achieve an EnerGuide rating of 80 or better and for individual energy savings measures that go into a new home.[87]

Use alternative energy sources when available:

- When available choose options such as district energy, solar or biomethane. FortisBC natural gas customers now have an option to sign up for renewable natural gas. By choosing this option, residents can, for about $5 more per month, designate 10 percent of the natural gas they use as renewable natural gas, and Fortis then injects the equivalent amount of renewable natural gas into its system.[88]

Improve energy efficiency in existing buildings:

- At Home
  Space and water heating account for over 77% of the energy used in an average home. While switching out lights to high efficiency compact fluorescents and LEDs is a great idea, lighting only accounts for 6% of an average home's energy use.[89] Bigger energy reductions can be achieved with retrofitting to a higher efficiency furnace and changing the method for hot water heating.

  Behavioral Changes (from highest impact to lowest impact):
  - Lower temperature at night and when away from home and install a programmable thermostat
  - Wear a sweater instead of increasing the heat
  - Keep doors and windows shut when it's cold outside to prevent heat escaping
  - Use cold water for washing clothes
  - Shorten showers
  - Get rid of the second fridge
  - Turn off lights and electronics when not in use[90]

  Retrofits (from highest impact to lowest impact)
  - Have an energy audit completed to determine where the largest reduction potential lies
  - Add insulation
  - Weather proof home including caulking
  - Replace old, less efficient furnaces with more efficient heating sources (e.g. high efficiency furnaces, ground source heat pumps, etc.)
  - Upgrade to an EnerChoice qualified fireplace
  - Install more efficient water heaters (example: solar hot water and high efficiency natural gas water heaters)
  - Upgrade windows

[87] FortisBC, New Home Program, fortisbc.com/Electricity/PowerSense/IncentivesPrograms/Pages/New-Home-Program.aspx
[88] FortisBC. Renewable Natural Gas. fortisbc.com/NaturalGas/Homes/Offers/RenewableNaturalGas/Pages/default.aspx
[89] FortisBC, Home Energy Saving Tips, fortisbc.com/NaturalGas/Homes/SavingEnergy/HomeEnergySavingsTips/Pages/default.aspx
[90] Some are from FortisBC, fortisbc.com/NaturalGas/Homes/SavingEnergy/HomeEnergySavingsTips/Pages/Save-on-heat.aspx

- At Work
  The amount of energy and where it is used is highly variable depending on the type of business. For example, in a large office building, lighting can account for up to 60% of electricity usage[91], while heating and cooling may be the primary energy needed in a warehouse. However, as at home, there are simple, no or low cost behavioral changes that can reduce energy including:
  - Control heating and cooling. Set lower temperatures at night (or warmer temperatures during the summer,) and keep doors closed to keep the cool/heat out. Maintaining heating and cooling systems will also ensure these systems are working at peak efficiency
  - Upgrade to a high efficient boiler, water heater, etc.
  - Monitor energy use
  - Caulk and weatherstrip windows and doors
  - Turn off lights and electronics when not in use

11.3 Planning Our Community

Maintain and Enhance Urban Forest:

- To help maintain and enhance Kelowna's urban forest, residents and businesses can plant and maintain trees on private lands. As previously mentioned in the "Planning Your Community Maintain and Enhance Urban Forest" section, the benefits of trees go far beyond mitigating climate change.

11.4 The Waste We Create

The Regional Waste Reduction Office provides many programs and services to encourage residents and businesses to recycle and reuse materials as much as possible. Residents and businesses can take advantage of these services to continually learn of new and innovative ways to reduce their waste. New programs such as the "Trunk Sale," a giant garage sale to lessen the amount of unwanted and unused items that end up in the landfill, or the Commercial Diversion Program that helps businesses reduce their waste, are just two innovative examples that help the community keep waste out of the landfill.

These simple tips can be adopted to reduce waste:

- *Reduce*. Select products that are built to last, rent items that are not often used, use reusable shopping bags.
- *Reuse.* Give away or donate used items or have a garage sale, buy used when possible.
- *Recycle.* Be selective with purchases to ensure all items are recyclable in your area and then recycle those items.
- *Rethink.* Rethink items before they are purchased.[92]
- *Compost.* Use a backyard composter to reduce yard and kitchen scraps by up to one half while creating a rich, organic soil conditioner for your garden.[93]

[91] FortisBC. fortisbc.com/Electricity/PowerSense/Businesses/Pages/Small-business--commercial.aspx
[92] City of Kelowna. Environmental Mind Grind Study Package, 2011. www.kelowna.ca/CityPage/Docs/PDFs//Environment%20Division/EMG-ElemSchoolPackage_web.pdf
[93] Regional District of Central Okanagan. Environmental Mind Grind Study Package, 2010. www.regionaldistrict.com/docs/waste/MindGrind/ElementaryStudyPackage.pdf

12. Adaptation

The Community Climate Action Plan addresses mitigation in an effort to reduce Kelowna's greenhouse gas emissions by 33% below 2007 levels by 2020. Climate change, however, is a global problem that is already being realized in many areas. Therefore, even if Kelowna is successful in drastically reducing emissions, the reality remains that the climate could still be significantly different in the region 50 years from now.

Communities are increasingly vulnerable to a range of climate impacts. Locally, impacts could include hotter, drier summers, changing precipitation patterns and volumes, increased storm intensity and flooding potentials, increased wild fire risks, and intrusion of invasive insects and plant species. Further, Kelowna could also be affected by increasing global demands for water and food resources and changing disease movement patterns among all forms of life, not to mention many other direct and indirect consequences.

> *"While neither adaptation nor mitigation actions alone can prevent significant climate change impacts, taken together they form a comprehensive climate change response strategy that will prepare communities for the climate impacts underway while working to avoid even worse future affects*
>
> ICLEI's Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation

Beyond planning to reduce greenhouse gas emissions, Kelowna must look towards adapting to a climate-changed world to address potential impacts as well as take advantage of opportunities. Kelowna's goal is not only to do what it can to mitigate climate change, but to prepare for it through responsible planning and investment in municipal programs, services and infrastructure. Kelowna is already planning and constructing to deal with potential climate change impacts including:

- domestic water supply and storage infrastructure
- storm management infrastructure along creeks
- increased detention pond capacity
- constructed wetlands for storm water filtering and flow management,

Further adaptation strategies will be needed as plausible impacts are better understood. A higher degree of local self-reliance is needed with an eye to flexible and rapid response to less predictable events and changing environments.

As a resilient city, Kelowna must have the ability to recover from disasters, to moderate the speed of change and then to adapt to permanent change. Also, to nurture a clear sense that our City has retained its essential character as it evolves must be inseparable from these adaptation strategies. With the exercise of careful planning combined with judicious investment, specific action strategies can be selected that achieve both greenhouse emission reductions and climate adaptations that prepare Kelowna to thrive in a changing future.

13. Community Climate Action Plan Implementation

Beyond helping to solve a global problem, Kelowna residents can immediately benefit from their efforts to reduce emissions. For example, by choosing active transportation, residents will become healthier and air quality will become better, leading to improved health for everyone. Alternative transportation choices also foster more social interactions and stronger neighborhoods. Raising the energy efficiency of buildings saves money, lowers household costs for families (with less utility costs) and creates local green jobs.

> *"The problem is real, the problem is here and doing nothing is not an option"*
>
> BC Climate Action Plan

The Community Climate Action Plan builds on the Official Community Plan theme of creating a vibrant community, sustainable prosperity and healthy citizens. OCP policies have renewed support in the Community Climate Action Plan. Several other City plans are also working towards creating a resilient community and will help to reduce greenhouse gases including the Urban Forestry Strategy, Corporate Energy and GHG Emissions Plan, Capital Plan, Downtown Plan, Housing Strategy, Strategic Plan and the Financial Plan.

To ensure the Plan's success, all of the actions must be implemented. This may require additional budget or a re-allocation of staff time and financial resources within allotted budgets. Departments will need to collaborate and work together to ensure that the actions are implemented.

In order to ensure the Plan is followed through, Policy and Planning will issue service requests to the lead departments for all 2012 action items. Further, departments will also receive service requests for 2013 proposed actions so they can consider these action items as part of their 2013 budget and work plans. Follow up reports, produced annually by the Policy and Planning Department, will track the communities' greenhouse gas emissions and status of each action item so that the Plan can be adjusted accordingly.

The City will need to continue to work with senior government, stakeholders, utility companies, businesses, non profits and residents in order to achieve a significant reduction in greenhouse gas emissions. The City can provide the infrastructure and programs. However, to achieve success, a public shift in behaviors is needed embracing the new opportunities including alternative transportation and energy reduction.

APPENDIX 1: Community Energy and Emissions Inventory (CEEI)

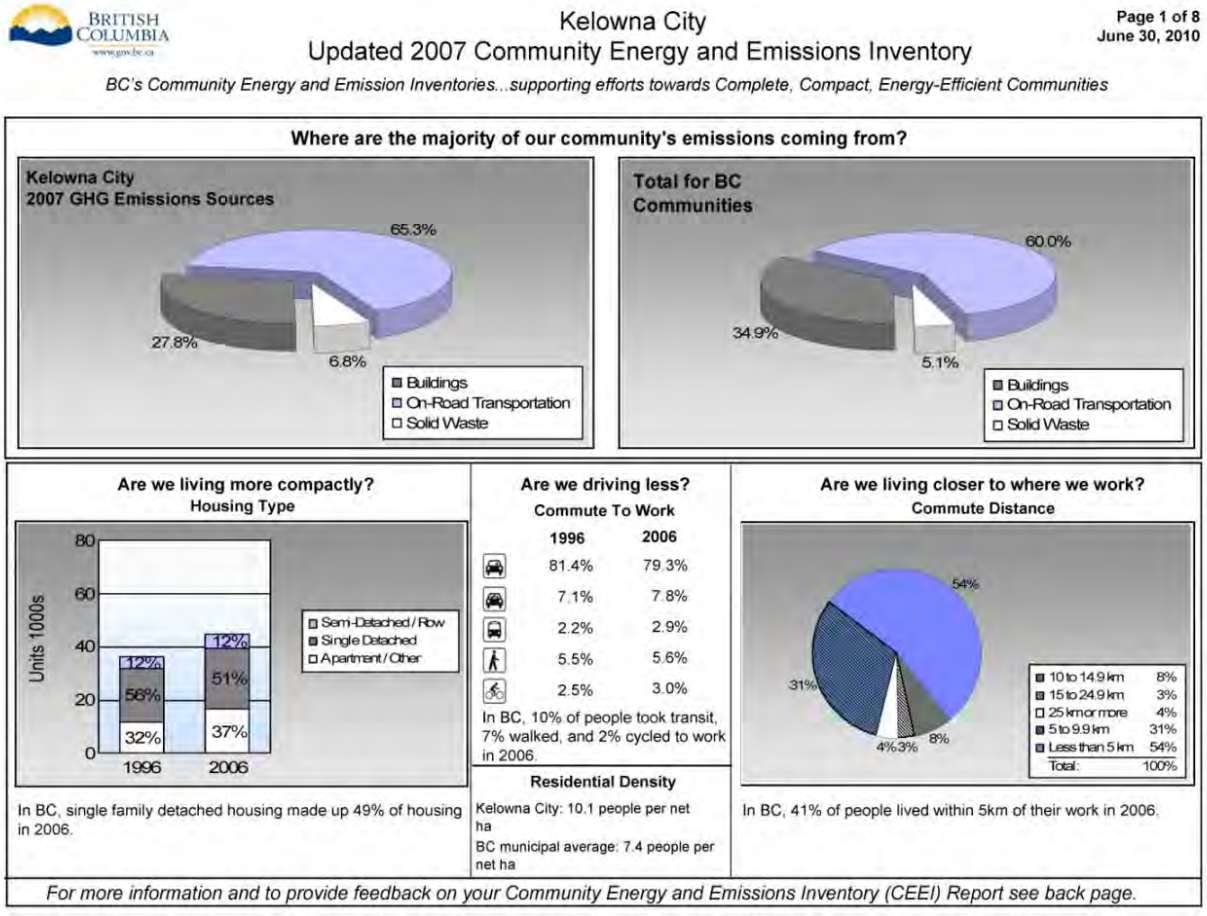
The Province of BC released updated Community Energy and Emissions (CEEI) inventory information for 2007 in June 2010. These new numbers differ from those presented in the Kelowna Community Greenhouse Gas Emissions Inventory and Projections Report, presented to Council in November 2009. The differences are due to improved information and methodology.

The Community Energy and Emissions Inventory (CEEI) represents energy consumption and greenhouse gas emissions from community activities in on-road transportation, buildings and solid waste. The CEEI does not include emissions for:

- land-use change from deforestation activities
- enteric fermentation from livestock under the Agricultural sector
- Airplane or locomotive emissions
- Emissions from the consumption of goods.

} Estimates available at the Regional District Level

The following images comprise the first four pages of the CEEI. View the complete Community Energy and Emissions Inventory report for Kelowna at www.env.gov.bc.ca/cas/mitigation/ceei/reports.html.



Sectors

On Road Transportation		Vehicles	Consumption	Measurement	Average-VKT(km)	Energy (GJ)	CO2e (t)
Small Passenger Cars	Gasoline	24,521	31,667,103	Litres	12,798	1,108,349	75,492
	Diesel Fuel	693	707,915	Litres	13,675	27,113	1,933
	Other Fuel	< 10	4,088	Litres	10,868	157	6
				Small Passenger Cars		**1,135,619**	**77,431**
Large Passenger Cars	Gasoline	14,566	30,117,719	Litres	17,015	1,054,120	71,579
	Diesel Fuel	293	654,448	Litres	17,728	25,065	1,786
	Other Fuel	36	82,827	Litres	14,505	3,172	127
				Large Passenger Cars		**1,082,357**	**73,492**
Light Trucks, Vans, SUVs	Gasoline	31,301	94,413,925	Litres	20,321	3,304,487	225,704
	Diesel Fuel	2,165	5,767,039	Litres	20,867	220,878	15,756
	Other Fuel	206	515,263	Litres	13,718	19,735	789
				Light Trucks, Vans, SUVs		**3,545,100**	**242,249**
Commercial Vehicles	Gasoline	204	906,748	Litres	14,422	31,736	2,120
	Diesel Fuel	802	3,929,471	Litres	22,055	150,499	10,574
	Other Fuel	40	126,092	Litres	11,794	4,829	193
				Commercial Vehicles		**187,064**	**12,887**
Tractor Trailer Trucks	Gasoline	10	57,153	Litres	12,142	2,000	134
	Diesel Fuel	1,047	36,708,618	Litres	91,588	1,405,940	98,781
	Other Fuel	11	27,800	Litres	9,009	1,065	43
				Tractor Trailer Trucks		**1,409,005**	**98,958**
Motorhomes	Gasoline	717	867,276	Litres	3,081	30,355	2,028
	Diesel Fuel	112	148,120	Litres	5,172	5,673	399
	Other Fuel	12	17,582	Litres	2,189	673	27
				Motorhomes		**36,701**	**2,454**
Motorcycles, Mopeds	Gasoline	1,504	642,471	Litres	5,492	22,486	1,500
				Motorcycles, Mopeds		**22,486**	**1,500**
Bus	Gasoline	67	602,249	Litres	22,571	21,079	1,416
	Diesel Fuel	154	3,220,055	Litres	38,169	123,328	8,665
	Other Fuel	< 10	33,649	Litres	15,902	1,289	52
				Bus		**145,696**	**10,133**

BRITISH COLUMBIA
www.gov.bc.ca

Kelowna City
Updated 2007 Community Energy and Emissions Inventory

	Gasoline:	5,574,612	379,973
	Diesel:	1,958,496	137,894
	Other Fuel:	30,920	1,237
On Road Transportation Totals	**All Fuels:**	**7,564,028**	**519,104**

Buildings	Type	Connections	Consumption	Measurement	Energy (GJ)	CO2e (t)
Residential	Electricity	49,316	512,613,266	Kilowatt Hours	1,845,406	3,140
	Natural Gas	31,160	2,517,233	GigaJoules	2,517,233	128,379
			Residential		**4,362,639**	**131,519**
Commercial/Small-Medium Industrial	Electricity	4,674	360,564,852	Kilowatt Hours	1,298,032	2,284
	Natural Gas	3,735	1,678,748	GigaJoules	1,678,748	85,616
			Commercial/Small-Medium Industrial		**2,976,780**	**87,900**
Wholesale	Electricity	1	291,854,400	Kilowatt Hours	1,050,675	1,751
			Wholesale		**1,050,675**	**1,751**
				Electricity:	4,194,113	7,175
				Natural Gas:	4,195,981	213,995
				Propane:		
				Wood:		
				Heating Oil:		
Buildings Totals				**Buildings:**	**8,390,094**	**221,170**

Solid Waste		Mass (t)	CO2e (t)
	Community Solid Waste	115,000	54,265

Grand Total		CONSUMPTION		ENERGY (GJ)	CO2e (t)
	Diesel Fuel	51,135,666	L	1,958,496	137,894
	Electricity	1,165,032,518	kWh	4,194,113	7,175
	Gasoline	159,274,644	L	5,574,612	379,973
	Natural Gas	4,195,981	GJ	4,195,981	213,995
	Other Fuel	807,301	L	30,920	1,237
	Solid Waste	115,000	T	0	54,265
Total of Transportation / Buildings / Solid Waste:				**15,954,122** GJ	**794,539** tonnes

Memo Items

Buildings	Type	Connections	Consumption	Measurement	Energy (GJ)	CO2e (t)
Large Industrial	Electricity	8	69,203,127	Kilowatt Hours	249,131	415
	Natural Gas	21	581,328	GigaJoules	581,328	29,648
				Large Industrial	**830,459**	**30,063**

Appendix 2: Letters of Support

Interior Health

January 17, 2012

Ms. Michelle Kam
Sustainability Coordinator
City of Kelowna
1435 Water Street
Kelowna, BC V1Y 1J4

Dear Ms. Kam,

RE: Community Climate Action Plan

On behalf of the Interior Health Medical Health Officers, I am pleased to offer support to the City of Kelowna for its Climate Action Plan.

The city's goal of reducing green house gas emissions by 33% by 2020 is to be commended for its ambitious targets. To reach this target all four categories identified for reductions (transportation, buildings, land-use and solid waste) will require a substantial shift in community behaviours and changes to infrastructure. The importance of controlling greenhouse gas emissions in relation to the fundamental determinants of population health cannot be overstated.

As with most communities, transportation represents the highest percentage of green house gases (GHG) emitted within a community. This plan highlights that moving community members to alternate transportation options such as biking, walking, and transit can potentially reduce GHG by a significant percentage. Active transportation impacts health by increasing physical activity and reducing the risk of obesity and the development of chronic diseases. Creating an environment where the healthy choice is the easiest choice will improve health, and contribute to the sustainability of our health care system

The Climate Action Plan in conjunction with the Official Community Plan will have profound beneficial impacts on the health and quality of life of current and future citizens of Kelowna.

Sincerely,

Dr. Andrew Larder, FRCPC
Senior Medical Health Officer

AL/ls

Kelowna Health Unit
1340 Ellis Street
Kelowna BC V1Y 9N1
Web: interiorhealth.ca

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FORTIS BC™
powersense

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Ms. Michelle Kam
Sustainability Coordinator
Policy and Planning
City of Kelowna

Re: Support for City of Kelowna Community Climate Action Plan, Energy Section

Dear Michelle:

FortisBC PowerSense and FortisBC Energy's Energy Efficiency and Conservation Division shares the City's goal of encouraging people to reduce natural gas and electricity usage, and greenhouse gas emissions.

To that end, we worked with the City of Kelowna's Policy and Planning Department over the last year to help develop the Energy Section of its Community Climate Action Plan. After closely reviewing several iterations of the Plan, we feel the recommendations are achievable and lay an important foundation to meeting these goals.

Many components of the Energy Plan recommend collaboration with FortisBC to further develop and enhance energy reduction programs for the residential and Industrial, Commercial and Institutional sectors. We want to assure you that FortisBC fully supports this cooperative approach and will assist the City, its residents and commercial sector to achieve these reduction goals.

Sincerely,

Carol Suhan
Manager, PowerSense Service

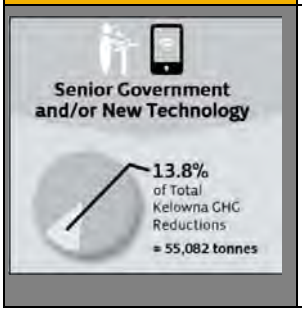
Sarah Smith
Manager, Energy Efficiency and Conservation

Appendix 3: Community Climate Action Plan Feedback 2012

An Open House and Online Survey were held in March 2012 to gain feedback on the proposed actions outlined in the Community Climate Action Plan. In total 71 people completed the survey and overall results are shown in the table below.

* indicates see below for additional details

	Action	Target	% Agree	% Disagree	% No Opinion
	Reduce vehicle kilometers travelled by 20% per capita	Use a combination of initiatives such as transit, walking, cycling, carpooling to reduce vehicle kilometers travelled by 20% per capita	90.8	4.6	4.6
	Right sizing vehicles	Promote consumer purchases to achieve a target of 15% fewer trucks, 7.5% fewer large cars (to be replaced with an equivalent amount of small passenger cars)	80.8	12.3	7.7
	Implement stricter tailpipe emission standards	Implement stricter emissions controls on passenger vehicles after 2016, with potential annual improvements of 6% for 2017 model vehicles and later	80.0	7.7	12.3
	Increase replacement rate of older vehicles	Promote the replacement rate of older vehicles to achieve a 10% increase in greenhouse gas emission standards compliant vehicles by 2020	47.7	38.5 *	13.8
	Improve vehicle maintenance and change driving habits to improve fuel efficiency	Encourage the public to undertake regular vehicle maintenance, maintain proper tire pressure and to not drive aggressively	84.6	10.8	4.6
	Reduce idling	Promote programs to reduce idling and develop an anti-idling bylaw	81.5	9.2	9.2
	Improve energy efficiency in new buildings	Achieve an EnerGuide rating of 80 for 100% of new, detached and single-unit row houses. Achieve the energy performance outlined in the new federal Model National Energy Code for 100% of new multi-unit residential, commercial, institutional and industrial buildings	92.2	4.7	3.1
	Install district energy	Implement district energy for City Centre and South Pandosy	75.0	6.3	18.8
	Utilize bio-methane for residential heating	Develop a facility at the Glenmore Landfill to recover landfill gas and upgrade it to pipeline-grade methane for heating residential homes. The reduction is based on 1600 homes using landfill gas bio-methane by 2020	84.4	6.3	9.4
	Improve energy efficiency in existing buildings	Reduce natural gas and electrical consumption in existing buildings by 3% below 2007 levels	89.1	6.3	4.7
	Increase building efficiencies through compact development	Achieve an annual incremental increase in compact development consistent with the 2030 Official Community Plan	81.3	7.8	10.9

	Action	Target	% Agree	% Disagree	% No Opinion
	Maintain and improve urban forest	Maintain existing urban forest; and City Parks to plant 25,600 trees by 2020 (a combination of seedlings and 2-3" caliper trees)	93.8	1.6	4.7
	Achieve municipal carbon neutral governance	Implement Corporate Energy and GHG Emissions Plan and purchase offsets to become carbon neutral	62.5	20.3 **	17.2
	Develop municipal policies and programs to achieve a low carbon community	Implement policies outlined in the 2030 Official Community Plan that are consistent with reducing greenhouse gas emissions and investigate the implementation of a development permit area for energy conservation	85.9	4.7	9.4
	Implement Regional Solid Waste Management Plan	Design and implement programs within the framework of the Central Okanagan Solid Waste Management Plan with the goal of exceeding diversion targets of 58% to 66% by 2023; and capture 50% of landfill gas with 70% efficiency	84.4	4.7	10.9
	Senior Government and/or New Technology	The remainder reduction to reach 400,169 tonnes (33% target) is to be achieved through new senior government programs and/or legislation in combination with new technological advances	68.8	4.7	26.6

*Increase replacement rate of older vehicles. Most of those who disagreed with this action commented that they thought that "most people can only afford what their budget allows" and "this creates more waste." As a result, the action and target have been reworded to address those who are planning on replacing a vehicle such that it is now "Encourage Emission Compliant Vehicles" with a target to "Encourage the purchase of greenhouse gas emission standard compliant vehicles (2011 model years and later) to those replacing a vehicle to achieve a 10% increase in greenhouse gas emission standard compliant vehicles by 2020.

**Achieve municipal carbon neutral governance. There was some concern during consultation with the "purchase offsets to become carbon neutral" target. The target has been reworded to "investigate offsets to become carbon neutral" instead of purchase offsets (this also concurs with similar concerns from staff and Council). A February 20, 2012 Council resolution directs staff to report back with updates regarding "making progress towards" GHG neutrality in conjunction with its annual infrastructure performance scorecard.

Appendix 4: Summary of 2012 Actions

x* denotes lead department

Reduction Initiative		Action	Civic Operations	Communications	Design and Construction	Development Services	Financial Services	Infrastructure Planning	Land Use Management	Parks	Policy and Planning	Real Estate and Building Services	Regional Services	Strategic Initiatives	Outside Organization
Reduce Vehicle Kilometers Travelled by 20% per Capita	1	Develop procedures and policies to implement OCP Policy 7.6.1, Transportation Infrastructure Priority, which prioritizes walking, biking and transit over vehicles				x		**x***			x				
	2	Complete Regional Active Transportation Plan											**x***		
	3	Initiate a Parking Management Strategy where the pricing structure shows the true cost of parking; where the cost of parking for an hour at a municipal facility exceeds the price of a single transit trip; and where cash-in-lieu pricing is included as per OCP Policies 7.11.1 and 7.11.2		x				**x***				**x***	x		
	4	Increase pedestrian and cycling infrastructure and maximize connectivity, as per OCP Policy 5.10.1 and 5.10.3 and OCP Objective 7.8.	x			x		**x***					x		
	5	In cooperation with BC Transit, work towards providing efficient and effective transit infrastructure and facilities as per OCP Policies 7.9 and 5.10.2 including transit priority, expansions and service levels		x				x					**x***		**x***
	6	Implement infrastructure upgrades recommended in Glenmore Elementary School Travel Plan		x				**x***							x
	7	Pilot a Neighbourhood Trip Planning Program		x				x					**x***		
	8	Continue to raise awareness of transit programs, bike networks and pedestrian networks for trip planning via web (e.g.: Google maps), maps, social media and ongoing TDM social marketing programs (e.g. Bike to Work Week, Neighbourhood Trip Planning, etc)		x									**x***		x
	9	Develop a TDM plan for employee commuting at Kelowna General Hospital		x									x		**x***
	10	Implement policy changes and provide funding and resources for programs that will help reduce VKT													**x***
	11	Investigate distance based insurance programs													**x***
Right Sizing Vehicles	12	Continue to offer existing incentives programs, as well as design and implement new education and incentive programs promoting the purchase of right-sized vehicles		x									x		**x***
Encourage Emission	13	Continue incentive programs, such as the Scrap It Program, to encourage residents to get older vehicles off the road													**x***

Reduction Initiative		Action	Civic Operations	Communications	Design and Construction	Development Services	Financial Services	Infrastructure Planning	Land Use Management	Parks	Policy and Planning	Real Estate and Building Services	Regional Services	Strategic Initiatives	Outside Organization
Compliant Vehicles	14	Encourage the purchase of greenhouse gas emission standards compliant vehicle to those replacing a vehicle		x									x		**x***
Improve Vehicle Maintenance and Change Driving Habits to Improve Fuel Efficiency	15	Encourage residents to undertake regular vehicle maintenance and proper tire pressure		x									x		**x***
Reduce Idling	16	Develop an Anti-Idling Bylaw											**x***		
	17	Investigate land use policies to reduce idling							**x***		x				
Improve Energy Efficiency in New Buildings	18	Change and implement the BC Building Code to improve energy performance of both small scale housing and larger more complex residential, industrial, commercial and institutional buildings													**x***
	19	Implement updated BC Building Code				**x***									
	20	Educate developers and the public on energy efficiency options including energy efficiency updates to Building Code, EnerGuide, energy efficient options and costs													**x***
	21	Implement OCP Policy 5.16.3 Variances for "Green" Features. Staff will give favourable regard to variance applications to reduce setbacks whose sole purpose is to accommodate green building features (e.g. solar panels etc.), provided that safety and neighbourhood impact issues can be addressed				x			**x***						
	22	Provide incentives to encourage higher energy efficiencies							x		x				**x***
	23	Support utilities companies, when appropriate, to help achieve their energy efficiency goals and targets		x							x				**x***
Install District Energy	24	Work towards proposed agreement for development of Downtown district energy system to support OCP Policies 7.19.2 and 7.19.3						**x***							x
	25	Work with the Community Energy Association (CEA) to develop policy(ies) to ensure that all new commercial, institutional and multi-unit residential buildings are district energy ready as per OCP Policy 7.19.1.						x	x		**x***				x
Utilize Biomethane for Residential Heating	26	Execute agreement(s) to develop landfill gas to pipeline grade bio-methane production facility to support OCP Policy 7.25.1 Resource Recovery.						**x***							
Improve Energy	27	Offer incentives including a financing program to encourage energy efficient retrofits and upgrades													**x***
	28	Inform and encourage homeowners and businesses to implement energy efficient upgrades for existing residential, commercial and industrial buildings				x					x				**x***

Reduction Initiative		Action	Civic Operations	Communications	Design and Construction	Development Services	Financial Services	Infrastructure Planning	Land Use Management	Parks	Policy and Planning	Real Estate and Building Services	Regional Services	Strategic Initiatives	Outside Organization
Efficiency in Existing Buildings	29	Train Development Services staff on available rebates and incentives in order for staff to provide information on available programs to those applying for permits				x					x				**x***
	30	Support utilities, when appropriate, to help achieve their energy efficient goals and targets		x							x				**x***
Increase Building Efficiencies Through Compact Development	31	Encourage compact neighbourhoods that place priority on infill, redevelopment and densification strategies to meet the target urban core concentration as identified in the 2030 OCP.							x						
Maintain and Improve Urban Forest	32	Develop an implementation team to prioritize the Urban Forestry Strategy recommendations including priorities, timelines, funding and staffing implications and strategy.								**x***					
	33	Plan for tree succession								**x***					
	34	Encourage homeowners to plant trees through programs such as Neighbourwoods		x						**x***					x
	35	Plant 200 2-3"caliper trees and 3000 native seedlings annually								**x***					x
Achieve Municipal Carbon Neutral Governance	36	Continue to apply for the Provincial Climate Action Revenue Incentive Program grant					**x***				**x***				
	37	Allocate Carbon/Energy Reserve Funds to projects that will help achieve Corporate GHG goal of 22% below 2007 by 2017.						**x***							
	38	Continue implementing reduction initiatives outlined in *Corporate Energy & GHG Emissions Plan* , 2011 as per OCP Policies 7.1.2, 7.1.3 and 7.2.2.	x	x				**x***		x		x			
Develop Municipal Policies and Programs to Achieve a Low Carbon Community	39	Implement OCP 2030 Policies	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	
	40	Investigate a Low Carbon Economic Development Zone and/or Energy Conservation Development Permit Area guidelines						x	**x***		x				
Achieve Regional Solid Waste Management Plan Targets	41	Continue to implement the Solid Waste Management Plan as per OCP Policy 7.24.1 and 7.25.2.						x							**x***
	42	Continue to expand collection of landfill gas as per OCP Policy 7.25.1	**x***		x			x							

Appendix 5: Summary of 2013 Proposed Actions

x* indicates lead department

Reduction Initiative	Action	Civic Operations	Communications	Design and Construction	Development Services	Financial Services	Infrastructure Planning	Land Use Management	Parks	Policy and Planning	Real Estate and Building Services	Regional Services	Strategic Initiatives	Outside Organization
Reduce Vehicle Kilometers Travelled by 20% per Capita	Investigate additional actions to take by 2020 to achieve the 20% reduction in VKT						**x**			**x***		x		
	Determine a method of tracking the success of reducing vehicle kilometers travelled by 20%						**x***			x		**x**		
	Develop a City wide Active Transportation Master Plan		x				**x***	x				x		
	Investigate the possibility of instituting a Regional Fuel Tax that would be directed to expansion and improvement of the regional transit system and/or alternative forms of transportation.											**x***		x
	Develop Parking Management Plan Implementation Plan						**x***				**x***			
	Ensure new arterial and major collector roads are built as complete streets that incorporate sidewalks and bike lanes as per OCP Policies 7.6.2 and 5.10.1			x	x		**x***					x		
	Ensure development includes the provision of sidewalks, trails and bike lanes to maximize pedestrian and cycling connectivity, where appropriate, as per OCP Policies 5.10.1 and 5.10.3				x			**x***						
	Plan a public bike share system						**x***					**x**		
	Develop and implement School Travel Plans for one to two schools per year						x					**x***		**x**
	Develop a TDM employer's toolkit for employers to encourage large employers to fund TDM initiatives for their employees instead of providing free or subsidized parking.		x				x					**x***		**x**
	Continue Action 1: Develop procedures and policies to implement OCP Policy 7.6.1, Transportation Infrastructure Priority, which prioritizes walking, biking and transit over vehicles				x		**x***			x				
	Continue Action 4: Increase pedestrian and cycling infrastructure and maximize connectivity, as per OCP Policy 5.10.1 and 5.10.3 and OCP Objective 7.8.	x			x		**x***					x		
	Continue Action 5: In cooperation with BC Transit, work towards providing efficient and effective transit infrastructure and facilities as per OCP Policies 7.9 and 5.10.2 including transit priority, expansions and service levels		x				x					**x***		**x***
	Continue Action 7 if successful: Pilot a Neighbourhood Trip Planning Program		x				x					**x***		

Reduction Initiative	Action	Civic Operations	Communications	Design and Construction	Development Services	Financial Services	Infrastructure Planning	Land Use Management	Parks	Policy and Planning	Real Estate and Building Services	Regional Services	Strategic Initiatives	Outside Organization
	Continue Action 8: Continue to raise awareness of transit programs, bike networks and pedestrian networks for trip planning via web (e.g.: Google maps), maps, social media and ongoing TDM social marketing programs (e.g. Bike to Work Week, Neighbourhood Trip Planning, etc)		x									**x***		x
	Continue Action 10: Implement policy changes and provide funding and resources for programs that will help reduce VKT													**x***
	Continue Action 11: Investigate distance based insurance programs													**x***
Right Sizing Vehicles	Investigate the feasibility of electric charging stations in urban core and urban centres and implement if feasible						**x***	x						
	Continue Action 12: Continue to offer existing incentives programs, as well as design and implement new education and incentive programs promoting the purchase of right-sized vehicles		x									x		**x***
Encourage Emission Compliant Vehicles	Continue Action 13: Continue incentive programs, such as the Scrap It Program, to encourage residents to get older vehicles off the road													**x***
	Continue Action 14: Encourage the purchase of greenhouse gas emission standards compliant vehicle to those replacing a vehicle		x									x		**x***
Improve Vehicle Maintenance and Change Driving Habits to Improve Fuel Efficiency	Continue Action 15: Encourage residents to undertake regular vehicle maintenance and proper tire pressure		x									x		**x***
Reduce Idling	Implement an Anti-Idling Bylaw											**x***		
	Develop an anti-idling education campaign		x									**x***		x
Improve Energy Efficiency in New Buildings	Continue Action 20: Educate developers and the public on energy efficiency options including energy efficiency updates to Building Code, EnerGuide, energy efficient options and costs													**x***
	Continue Action 21: Implement OCP Policy 5.16.3 Variances for "Green" Features. Staff will give favourable regard to variance applications to reduce setbacks whose sole purpose is to accommodate green building features (e.g. solar panels etc.), provided that safety and neighbourhood impact issues can be addressed				x			**x***						
	Continue Action 22: Provide incentives to encourage higher energy efficiencies							x		x				**x***

Reduction Initiative	Action	Civic Operations	Communications	Design and Construction	Development Services	Financial Services	Infrastructure Planning	Land Use Management	Parks	Policy and Planning	Real Estate and Building Services	Regional Services	Strategic Initiatives	Outside Organization
	Continue Action 23: Support utilities companies, when appropriate, to help achieve their energy efficiency goals and targets		x							x				**x***
Install District Energy	Begin construction of Downtown District Energy System to support OCP Policies 7.19.2 and 7.19.3	x					**x***							x
Utilize Biomethane for Residential Heating	Once approved, construct production facility in support of OCP Policy 7.19.3.	x					**x**							**x***
Improve Energy Efficiency in Existing Buildings	Continue Action 27: Offer incentives including a financing program to encourage energy efficient retrofits and upgrades													**x***
	Continue Action 28: Inform and encourage homeowners and businesses to implement energy efficient upgrades for existing residential, commercial and industrial buildings				x					x				**x***
	Continue Action 30: Support utilities, when appropriate, to help achieve their energy efficient goals and targets		x							x				**x***
Increase Building Efficiencies Through Compact Development	Continue Action 31: Encourage compact neighbourhoods that place priority on infill, redevelopment and densification strategies to meet the target urban core concentration as identified in the 2030 OCP.							x						
Maintain and Improve Urban Forest	Implement Urban Forestry Strategy				x		x	x	**x***	x				
	Continue Action 33: Plan for tree succession								**x***					
	Continue Action 34: Encourage homeowners to plant trees through programs such as Neighbourwoods		x						**x***					x
	Continue Ation 35: Plant 200 2-3"caliper trees and 3000 native seedlings annually								**x***					x
Achieve Municipal Carbon Neutral Governance	Continue Action 36: Continue to apply for the Provincial Climate Action Revenue Incentive Program grant					**x***				**x***				
	Continue Action 37: Allocate Carbon/Energy Reserve Funds to projects that will help achieve Corporate GHG goal of 22% below 2007 by 2017.						**x***							
	Continue Action 38: Continue implementing reduction initiatives outlined in *Corporate Energy & GHG Emissions Plan* , 2011 as per OCP Policies 7.1.2, 7.1.3 and 7.2.2.	x	x				**x***		x		x			
Develop Municipal Policies and Programs to Achieve a Low Carbon Community	Continue Action 39: Implement OCP 2030 Policies	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	**x***	
	Continue Action 40: Investigate a Low Carbon Economic Development Zone and/or Energy Conservation Development Permit Area guidelines						x	**x***		x				
Achieve Regional Solid Waste Management Plan Targets	Continue Action 41: Continue to implement the Solid Waste Management Plan as per OCP Policy 7.24.1 and 7.25.2.						x							**x***
	Continue Action 42: Continue to expand collection of landfill gas as per OCP Policy 7.25.1	**x***		x			x							

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